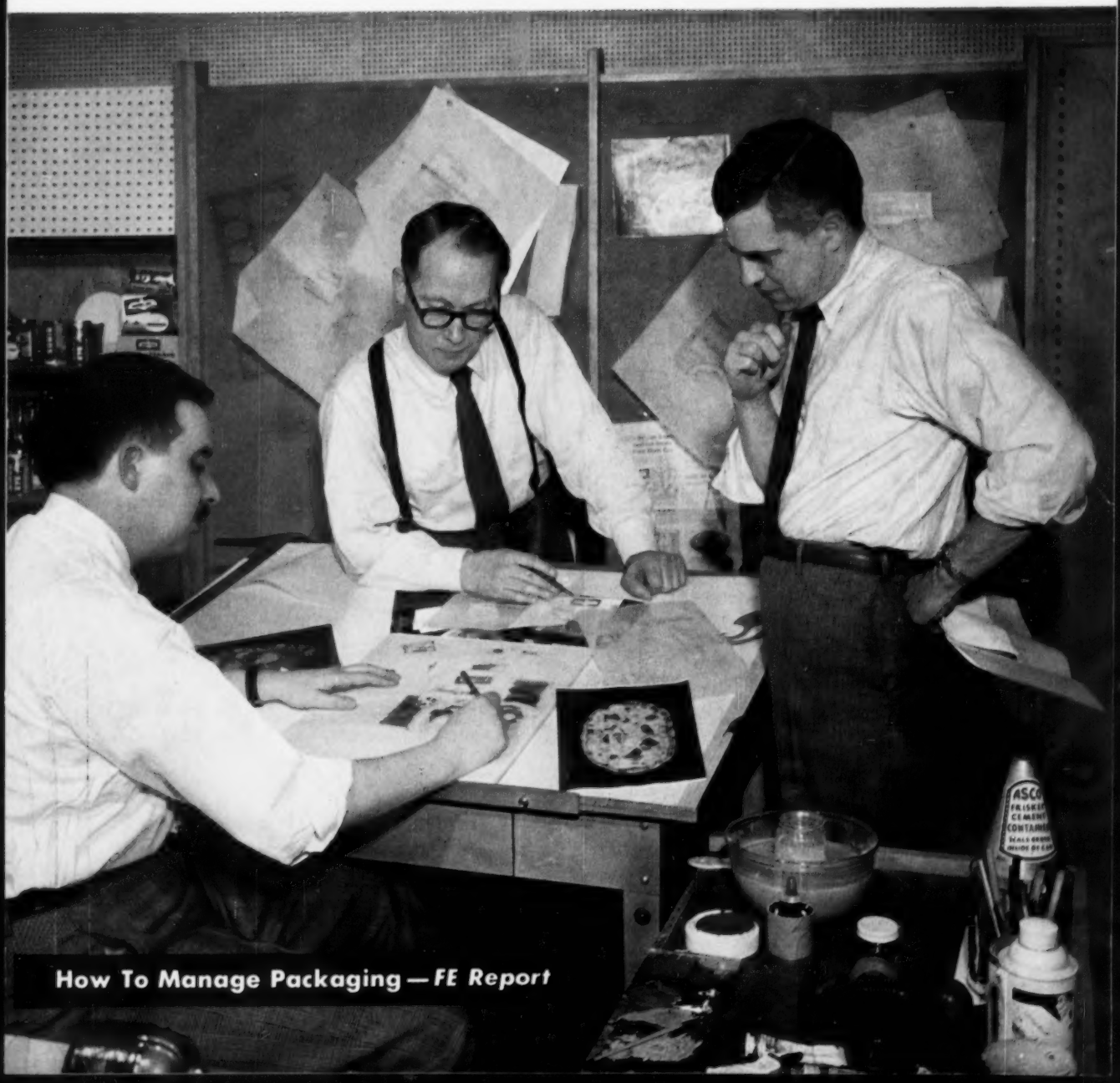
JULY 1957

PRICE 35 CENTS

FOOD ENGINEERING

A McGRAW-HILL PUBLICATION



How To Manage Packaging—*FE Report*

Sterwin offers "TRIPLE" SERVICE

to help the Food Industry produce better products

1

Products and Delivery

Most complete line of Vitamins, U.S.P., Vanillin, U.S.P., Certified F.D.&C. Colors. Any quantity—when you want them—where you want them. Quick delivery from branches in 11 cities covering the United States and Canada.

2

Research and Testing

Sterwin customers served by huge Sterling-Winthrop Research Institute . . . one of the world's largest research laboratories. Constantly working to improve existing products . . . and to originate new products and processes.

3

Technical Sales Service

"On the spot" service based on years of technical and practical experience. Supplemented by home office service staff and Sterwin Research.

TIME AND AGAIN Sterwin Service, Products and Research have enhanced a good product's salability by adding more taste-appeal, eye-appeal, health-appeal. Find out how Sterwin men, materials and methods can help you.

CONTACT YOUR STERWIN REPRESENTATIVE OR WRITE DIRECT TO:

BRANCH OFFICES & STOCKS CARRIED AT:
Atlanta, Buffalo, Dallas, Evanston, Ill., Kansas City, Mo., Los Angeles, Portland, Ore., St. Louis, San Francisco.
IN CANADA: Montreal, Toronto.

Sterwin Chemicals INC.
Subsidiary of Sterling Drug Inc.
1450 BROADWAY, N. Y. 18, N. Y.

VITAMINS, U.S.P.—ZIMCO® VANILLIN, U.S.P.—PARAKEET® CERTIFIED F. D. & C. COLORS—ROCCAL® SANITIZING AGENT

← For more data, circle this page number on card at back

FOOD ENGINEERING

JULY 1957

VOL 29 NO. 7

SPECIAL REPORT—Packaging Management 85
Inescapable Force in Executive Planning 86
Set-Ups Using One-Man Control 91
Large-Scale Development Programs 100
Effective Committee Systems 106
Packaging Check List 112

PACKAGING **Creating the Package: Spruces Up Paper Bag for Economy Pack** 18
Laminated stock turns the trick. (See also New Packages & Products, p. 20).

Trends & Forecasts . . . . . 7 *Developments to Watch* 17

MANAGEMENT **Is Your Plant Well Managed?** 55
Executives are too preoccupied with production, according to dairy-field survey.

Ole Sage Episode: How Can We Stop the 'Past-40 Discard'? 33
Down to practical points on bettering oldsters' job chances, extending their productivity.

SANITATION **How Management Masterminds Effective Preventive Sanitation** 59
This front-office executive takes a PERSONAL role—and it pays off in top results.

QUALITY CONTROL **Gaging Frozen Food Temperature** 74
Here are the best ways to take cased-product readings, thus assuring reliable control.

PROCESSING **For Quality and Appeal Use These Latest Icing Techniques** 78
Flat-frosting "how-to" from an expert. Also what to look for in sanitary equipment.

ENGINEERING **Downtime Just 4 Days for Plant Modernization** 58
Engineers' jig-time installation of all-new pretzel line averts big snafu.

Fast 2-in-1 Line Makes 68 Varieties of Product 66
Advanced unit operations set new efficiency pattern on unique doughnut line.

Radial-Plate Freezer Achieves Low-Cost Operation 70
Space- and money-saving unit features hydraulic rotation on center axle.

INSTRUMENTS **Intensive Instrumentation Keys Processing of Versatile Product** 62
How automated controls enable 1-man operation in latest instant starch plant.

MAINTENANCE **Long Hard Service Doesn't Faze Special Concrete Flooring** 69
Tough topping is virtually maintenance free. Tops in looks, it's cleaned in a jiffy.

TRANSPORTATION **Ships Vari-Temperature Foods in One Versatile Dual-Load Trailer** 65
Carrier incorporates separately cooled sections to haul bigger payloads in less runs.

TURN TO PAGE 5

SAVE TIME and MATERIALS

with FASTER, ACCURATE READINGS RIGHT ON THE PRODUCTION LINE

Bausch & Lomb

INDUSTRIAL

Refractometer

Avoid costly production delays, protect quality, with on-the-spot determinations of refractive index or % dissolved solids—accurate to 0.0001! Super-speed loading, reading, cleaning. Trouble-free: no adjustments, no moving parts. Sturdy, stable, for hard on-the-line use. And priced low enough so you'll want one for each testing area. Choice of 7 specific scale ranges.

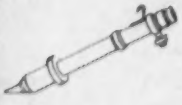
NEW LOW PRICE only $350!

ABBE-3L REFRACTOMETER
Just LOAD-LIGHT-LOOK; top-accuracy readings to .0005, estimates to .0001 . . . in seconds!

INDUSTRIAL REFRACTOMETER
Laboratory accuracy on production lines; choice of 7 scale ranges; accurate to ± .0001.

BUTYRO REFRACTOMETER
Easy horizontal loading; fast readings to 0.1 Butyro number.

PRECISION REFRACTOMETER
Identifies samples whose indexes are close together; accurate to .00003.



DIPPING REFRACTOMETER
Tests solutions in bulk; splash-protected; index accuracy to 0.000035.

JUICE REFRACTOMETER
Direct readings to 0.1 % by transmitted or reflected light; 0-25 % dissolved solids range.

HAND REFRACTOMETER
Direct readings to 0.2 %; choice of 0-60 % or 40-85 % dissolved solids range.

OIL GRADING REFRACTOMETER
Direct readings of flaxseed, soybean samples to nearest ½ iodine-number unit; estimates to 1/10.

FILL YOUR QUALITY CONTROL NEEDS FROM INDUSTRY'S MOST COMPLETE LINE

Only the *right* instrument for the specific job can protect quality standards . . . save time . . . cut production costs. Only the complete, top-accuracy Bausch & Lomb line assures you the *right* instrument for *every* job; on-the-spot production line inspection . . . field checks . . . research. Find out now how the *right* B&L instrument makes peak efficiency easy.

MAIL COUPON FOR COMPLETE DATA

BAUSCH & LOMB OPTICAL CO.
60319 St. Paul Street, Rochester 2, N. Y.

Send me complete data on the following B&L Refractometers:

☐ Abbe-3L ☐ Precision ☐ Butyro ☐ Industrial
☐ Dipping ☐ Juice ☐ Hand ☐ Oil Grading
☐ I would like a demonstration of the B&L Refractometers checked above.

NAME.....
TITLE.....
COMPANY.....
ADDRESS.....
CITY..... ZONE..... STATE.....

BAUSCH & LOMB
SINCE B&L 1853

America's only complete optical source . . . from glass to finished product.

Visit B&L Booth #7, Institute of Food Technologists, Hotel Penn Sheraton, Pittsburgh, Pa., May 12-15

IN FE FOR JULY 1957 Continued From Page 3

DEPARTMENTS

Trends & Forecasts—Taking the pulse of the industry's business..... 7
Hors d'Oeuvres—Interesting items that make pertinent points..... 12
Developments to Watch—Highlighting innovations of special significance.. 17
Creating the Package—Case histories of topflight package development.... 18
New Packages & Products—Innovations in foods, containers, and wraps.. 20
Practical Ideas—Do it yourself devices and methods that pay dividends.... 39
FE Opinion—Editorial comments in the interest of progress..... 53
Keeping Up With the Field—News roundup, industry and Washington... 125
Schedule of Events—Dates and places of conventions and meetings..... 133
Men & Companies—What people and firms in the industry are doing.... 137
Advances in Technology—Technical progress briefly reported in abstracts.. 143
Questions & Answers—Solutions to problems that trouble food men..... 152

FE Service Center 157

New Equipment & Supplies—Machines and materials to do it better..... 158
Just Off the Press—Free literature on equipment, supplies, and their uses... 176
Useful New Books—Latest publications for the food-plant bookshelf..... 191
Recent Inventions—New machines and processes recently patented..... 193
Classified Advertising—Offering services, employees, jobs, equipment.... 197
Advertisers' Index—Quick locator of advertisements in this issue..... 201
Reader Service—Handy inquiry cards bring you free information.....Back page

FRANK K. LAWLER, *Editor*

A. V. GEMMILL *Senior Associate Editor*
C. R. HAVIGHORST *Senior Associate Editor, San Francisco*
HERB POWELL *Managing Editor*
JOHN V. ZIEMBA *Associate Editor, Chicago*
LEONARD TRAUBERMAN *Assistant Editor*
ROBERT J. KELSEY, *Assistant Editor*
HAROLD RAPP *Assistant Editor*
EDWARD P. McGRATH *Art Editor*
WILLIAM FARNAN *Assistant Art Editor*
S. D. KIRKPATRICK *Consulting Editor*
G. B. BRYANT, JR. *Washington*
R. S. McBRIDE *Consulting Editor*
DEXTER M. KEEZER *Economics Department*
JOHN R. WILHELM *World News*

GRAHAME E. RIDDELL, *Publisher*

IVAN C. MILLER, *Circulation Manager*

FOOD ENGINEERING (Formerly Food Industries) July 1957, Vol. 29, No. 7

Published monthly by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder.

Executive, Editorial, Circulation, and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Publication Office: 99-129 N. Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change of address. Second class mail privileges authorized at Post Office, Albany, N. Y. Printed in U.S.A. Title registered in U. S. Patent Office.

©Copyrighted 1957 McGraw-Hill Publishing Co., Inc., all rights reserved.

Donald C. McGraw, President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator.

Subscriptions are solicited only from the executives, engineers, technologists, and other management men, in companies engaged in food manufacturing. **Position and company connection must be indicated on subscription orders. Send to address shown in box below.** Rate, U. S., possessions and Canada, for individuals in field of publication $2 per year, single copies 35¢; all other foreign $20 per year.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, Food Engineering, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone, if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send form 3579 to Food Engineering, 330 W. 42nd St., New York 36, N. Y.

Bob Kelsey Checks Up . . .

. . . on packaging materials in the field—at exhibits, as seen here, as well as in laboratories and plants.

Bob is specializing on packaging, in all its aspects. In this issue he presents a valuable 18-page Special Report on Packaging Management. The results of weeks of work and hundreds of miles of travel, this report tells you how to organize and follow-through to keep your company—large or small—out in front in packaging performance and efficiency (see p. 85).

Take a look, too, at Mr. Kelsey's Creating the Package department. This unique service to readers appears in every issue of FE, along with Bob's articles on packaging.

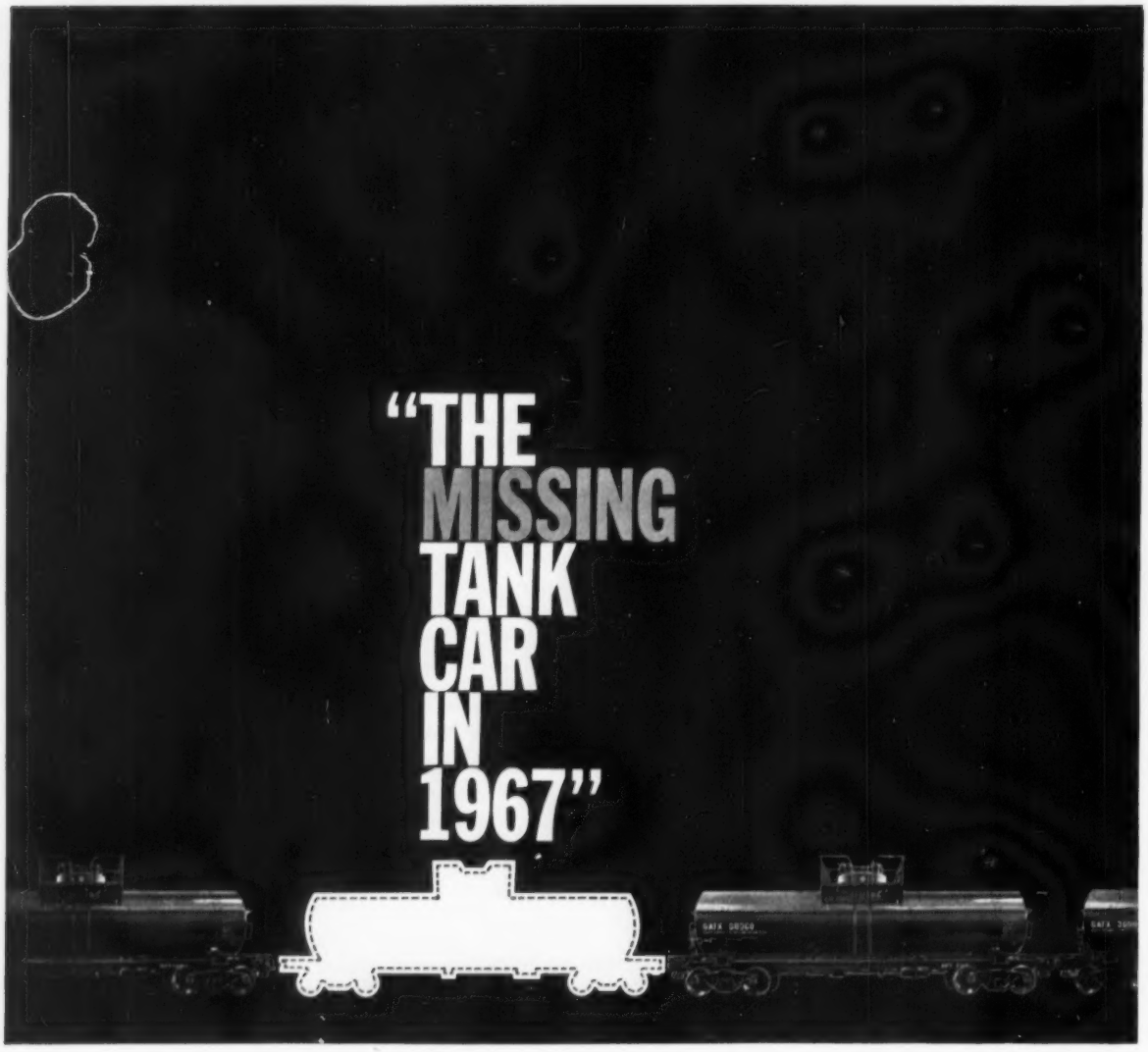
But we mustn't sell Mr. Kelsey short. His ability to serve you through the pages of FE goes far beyond packaging. Though blessed with youth and the drive that goes with it, he has an extensive background of education and experience—in food technology, mechanical engineering, plant production, and quality control.

Want to know how to lick a serious sanitation problem? Well, one packer did. And Bob, as USDA inspector, helped to set up a basic program, with daily controls, that saved the situation.

Or maybe you would like to achieve still lower production costs. That was the case in a food plant where Bob was assistant super. Product-flow simplification and speed-up of materials handling brought him victory on that one. Here, his penchant for teamwork insured the cooperation of others in making it work.

You know that Mr. Kelsey is a good writer—the proof is in the pudding. Add it all up, and you have another top-flight FE editor.

COVER PHOTO. . . . shows industrial designers at Frank Gianninoto Associates, New York, at work on package for Birds Eye's new frozen dinner for two.



"Somebody was guilty. Here we are—production coming out of our ears—sales opportunities popping in every direction—new profits practically under our noses—and somebody had failed to order enough general-purpose tank cars to make deliveries.

We should have seen it ten years ago. Way back in 1957, almost every economist kept telling us business would expand more than 50% in the next decade—steel was going to be tough to get—normal obsolescence would subtract even more cars and new tank cars couldn't be built overnight. But—we put off doing anything about it. Then it was too late. Maybe your company can benefit from our experience."

P. S. Plan now to discuss your long range needs with our GATX District Man. You'll find . . . it pays to plan with General American.

GENERAL AMERICAN TRANSPORTATION CORPORATION
135 South La Salle Street • Chicago 90, Illinois

TRENDS & FORECASTS

Special

FOOD ENGINEERING

Service to Executives

Salaries of executives in middle management are 6% higher than last year, AMA reports. Three-fourths of these executives received pay boosts last year. Salaries range from $6,000 to $15,000 in small firms, and go as high as $30,000 in large companies.

Business still looks good at mid-year, with the gross national product running at the annual rate of $430 billion, the McGraw-Hill Department of Economics reports. And with inventories reduced in the face of rising sales, the possibility of a major setback in 1957 has just about vanished.

Consumer demand for food is strong, with employment and income high. Supplies of most major foods are expected to continue close to last year's high level. Pork, however, is down 9%, and lard is in smaller supply. Retail prices are running a little higher than last year.

Net income of food and beverage manufacturers is up 8% for the first quarter of this year, compared to the same period in '56. The figure is based upon earnings by 41 leading companies, tabulated by First National City Bank.

American food firms are expanding abroad at an accelerating pace as higher incomes in foreign lands provide increasingly profitable markets. H. J. Heinz has done so well in Australia, for example, that it is extending operations there at an even faster rate than in the U.S.

A battle of the brands, with low price as the major weapon, is changing the marketing of frozen foods. Some distributors are developing their own brands, causing smaller packers to form marketing groups to offer complete lines and develop better sales programs.

New Frozen Records Set

Frozen fruit and vegetable packers set an all-time record of 2.2 billion lb. in 1956. This is 24% higher than the 1955 record, according to National Association of Frozen Food Packers. And it does not include the year's record pack of frozen concentrated juices.

But the most significant trend is a 50% increase in vegetables packed for institutional and bulk users. This is surprising in view of some predictions of a drop in the use of frozen vegetables by food service organizations.

The vegetable pack, at 1.5 billion lb., was 34% higher than 1955's record production. The fruit pack, 694 million lb., also was a new record but only 5% above the year before.

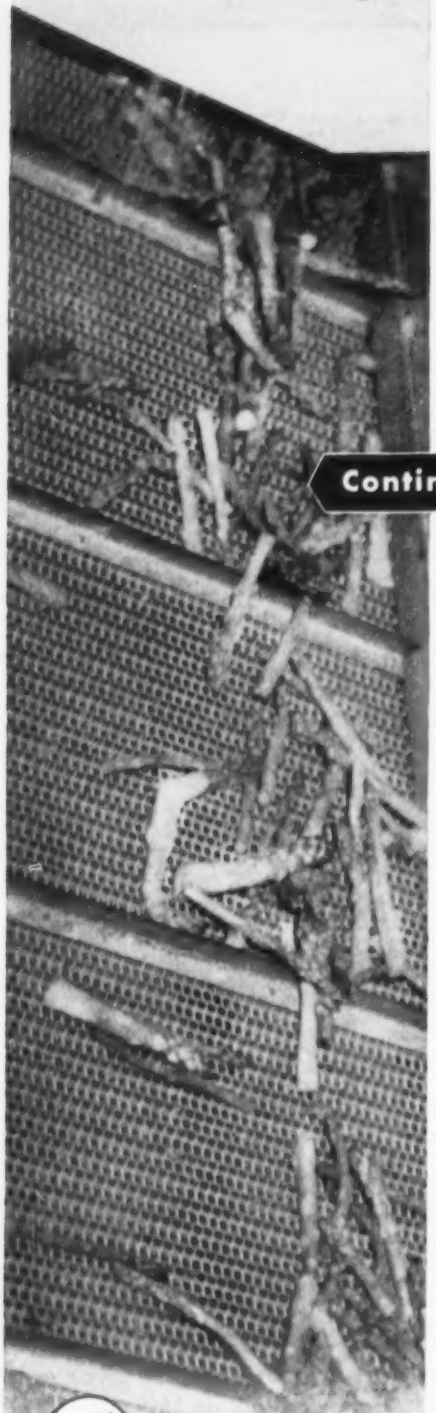
The chief vegetable item, frozen green peas, accounted for 360 million lbs., nearly 56% greater than in 1955. Next in line were the frozen potato products at 189 million lb., 85% of which were french fried.

In order of rank, the other leading vegetables were green and wax beans, 138 million lb.; broccoli, 118 million; cut corn, 118 million; spinach, 104 million; fordhook lima beans, 75 million; baby limas, 68 million.

Strawberry Pack up 15%

Frozen fruit production was dominated by the record 312 million lb. pack of strawberries, 15% over 1955. Next in line were R.S.P. cherries, 88 million lb.; apples, 87 million; and peaches, 45 million. All

HOW *Cambridge* Wire Mesh Belts reduce food processing costs



By providing continuous movement through all phases of food processing, wire mesh conveyor belts minimize manual handling, enhance quality and uniformity, improve sanitation and reduce damage. Meat, poultry, candy, baked goods, fruit and produce can be frozen, canned, fresh-packed or baked faster and easier on moving belts. EXAMPLE:

Continuous Washing

MOVING BELT carries asparagus continuously from wash tank through a spray rinse on the way to the blancher.

SPECIAL CROSS FLIGHTS pick up stalks from surface of the wash water, hold them on the belt during inclined travel.

OPEN MESH permits rapid drainage of wash water, increases uniformity by providing free circulation of steam in blanching and of sub-zero air in freezing tunnel, allows small waste particles to fall through so they won't contaminate belt or product.

RUSTPROOF ALL-METAL BELT provides long life, is impervious to damage from process solutions, heat and cold . . . has no odor . . . will not contaminate product.

Cambridge Wire Mesh Conveyor Belts are made in any size, mesh or weave, from any metal or alloy, and can be used under a wide range of conditions . . . hot or cold, wet or dry. Call your Cambridge Field Engineer to discuss how you can cut food processing costs with continuous processing on woven wire conveyor belts. Look for his 'phone number under "Belting, Mechanical" in the Yellow Pages or write for FREE 130-PAGE REFERENCE MANUAL.

The Cambridge Wire Cloth Co.

Department Q,
Cambridge 7,
Maryland

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

Trends & Forecasts

fruit and vegetable weights are recorded on a ready-to-eat, not a raw material, basis.

Packaged Dry Milk Gains

Production of nonfat dry milk has its ups and downs. That packaged for home use enjoyed a 12.7% boost in 1956 from the instantly soluble brands. And meat processors and confectionery manufacturers used 4.6% and 3.9% more, respectively, of non-fat milk solids in their products.

But other end uses decreased to pull last year's domestic sales down 5.8%, to 746.7 million lb., according to American Dry Milk Institute. The drop amounted to 85.7% for chemicals and pharmaceuticals; 52.5% for soft drinks; 33.7% for animal feed; and 27.2% for prepared dry mixes (see table).

Despite the domestic drop, total production of nonfat dry milk solids increased 5.2% in '56, to 1,483.9 million lb.

Biggest domestic user of the product is the bakery field, which last year took 272.3 million lb., or 36.5% of the total, non-government use. Next came the dairy buyers, accounting for 162.9 million lb., or 21.8%. Home use came in a strong third, at 154.2 million lb., or 20.7% of the volume.

Domestic use is itemized in the following table:

	1956 Amount (million lb.)	1956 Percent of total	'55 to '56 (% change)
Bakery	272.3	36.5%	— 8.8%
Dairy	162.9	21.8%	—11.3%
Packaged for home use	154.2	20.7%	+12.7%
Meat processing	84.5	11.3%	+ 4.6%
Prepared dry mixes	36.7	4.9%	—27.2%
Confectionery	15.8	2.1%	+ 3.9%
Soup manufacturers	2.6	0.3%	—10.3%
Soft drink bottlers	1.9	0.3%	—52.5%
Institutions	1.9	0.2%	— 5.0%
Chemicals; pharmaceuticals	0.1	0.1%	—85.7%
Animal feed*	5.5	0.7%	—33.7%
All other uses	8.3	1.1%	

*Processed for human consumption; not to be confused with dry skim milk for animal feed.

Midyear Crop Outlook Good

Increased production of foodstuffs over last year is forecast for most commodities by the U. S. Dept. of Agriculture's mid-June crop reports.

Most noteworthy item in the forecast is a finding that total U. S. wheat production looks almost as

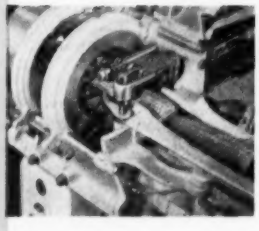
← For more data, circle this page number on card at back

MORE CORN OFF THE COB
Faster, Cleaner
—Unmatched for Yield

Morgan Packing Company, Inc., with 48 FMC Model 3-A Cutters in three plants, shows impressive production gains on cream style corn.

The New FMC Model 3-A Corn Cutter

- ✓ Up to 7% more yield per ear!
- ✓ Up to 20% more output per cutter!
- ✓ No grading—handles mixed ear sizes!
- ✓ Less maintenance—21% fewer parts!
- ✓ Up to 50% more cutting between honings!



Automatic pre-opening of knives assures proper cut, deep or shallow, according to ear size. Gauging fingers and knife settings are adjusted instantly while cutter is in operation.

Many leading plants put thousands of production hours on hundreds of new Model 3-A Corn Cutters last season. Conservative customer estimates of increase in yield range up to 7%—depending on make and model of corn cutters replaced. In case after case, yield and quality are reported as greatly improved—even where operations average 120 or more ears per minute! Featuring A.S.D. —"Automatic Size Detection," the all-new Model 3-A utilizes a system of pre-opening knives which cut mixed ear sizes to any desired depth—without size grading or constant machine adjustment. Get the full story from your FMC representative, or write for descriptive bulletin No. 601-E today. You'll want information on the FMC easy-to-use Knife Honer, too.

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

General Sales Offices:
WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

For more data, circle this page number on card at back →

DO YOU USE STEAM, WATER OR ANY LIQUID IN YOUR PROCESS?

Then you may need

STANOIL Industrial Oil

Plants with wet processing have a real lubrication problem when steam, water or liquids from the processing operation enter the lubrication system. Many lubricating oils emulsify when agitated with water, especially when there is a small amount of dirt present. With water in the oil, there is the chance that no oil film exists between metal surfaces. Result: wear, corrosion, equipment failure. The chance of this happening is eliminated when you use STANOIL Industrial Oil.

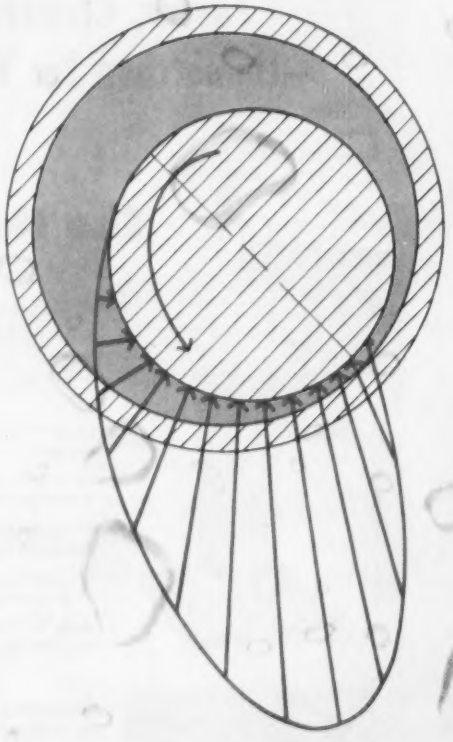
By special refining techniques, STANOIL Industrial Oil is made resistant to emulsification. No matter how tight the lubrication system, some water will always be present either through seepage or through condensation. STANOIL resists the tendency of this water to mix with the oil. Instead, STANOIL separates out and continues to perform its job of lubricating bearings and other moving metal parts. In addition, STANOIL minimizes air entrapment with a special defoamer additive.

This is just one way in which STANOIL Industrial Oil can help you get superior lubrication of equipment. STANOIL has unusually high stability, gives longer oil life, minimizes carbon deposits and wear of equipment. A special rust inhibitor prevents rust and corrosion by "plating out" on metal surfaces.

STANOIL's low pour point assures a free-flowing lubricant in cold service and at start up.

STANOIL has a high viscosity index, resists viscosity change over a wide temperature range. The low carbon-forming tendency of STANOIL means low-cost operation and long-service life of equipment.

Get the facts about STANOIL Industrial Oil from the Standard Oil office near you in any of the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 S. Michigan Ave., Chicago 80, Ill.



Lubrication trouble spots
where STANOIL Industrial Oil can serve you

- **Washing equipment**
- **Agitators**
- **Conveyor drives**
- **Air compressors**
- **Speed reducers**
- **Lift trucks**
- **Electric motors**
- **Auxiliary turbines**

STANDARD OIL COMPANY
(Indiana)

STANDARD

large as last year's—despite the large acreages that have been committed to the soil bank.

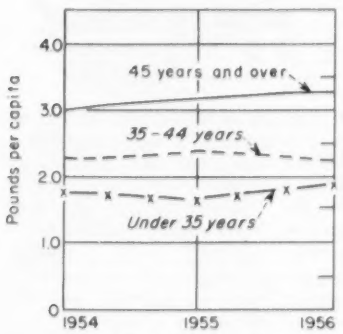
Total wheat crop, U.S.D.A. figures, will be 970 million bushels. The 1956 wheat crop came to 997 million bushels. The import of this situation is that a further accumulation of surplus wheat is almost inevitable this year. Favorable weather across the midlands, where drought was a crop stifler a year ago, is responsible.

If the mid-June estimates are realized when harvest is completed, U. S. farmers will be in the position of having produced only 3% less wheat than in 1956 on 22% fewer acres. Only about 43 million acres were planted to wheat this year, against 55 million a year ago. The 12 million "missing" acres went to the soil bank.

Other major commodities covered in the report show good progress, and the seasonal gain in milk production for May was about normal, while egg production dropped as is customary between April and May.

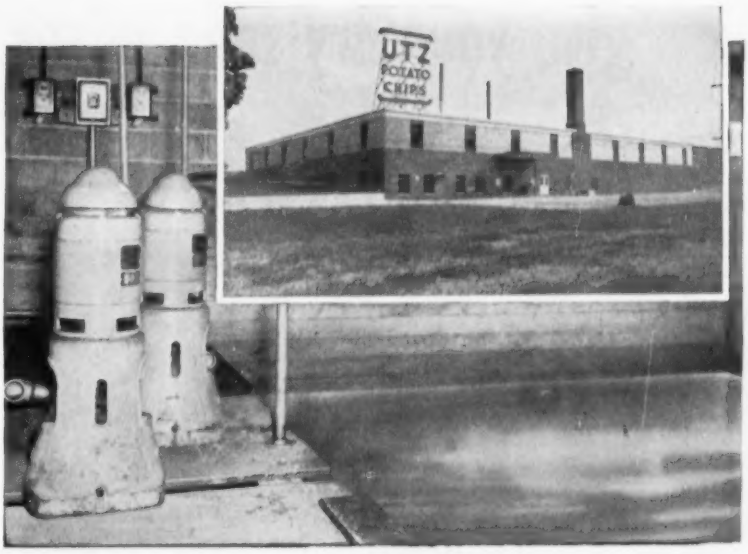
Milk production for May is calculated at 13.1 million pounds, up from 11.4 million on the prior month and 12.8 million in May a year ago. The latest May output also is well above the 10-year average (1946-'55) of 12.3 million pounds for the month.

Egg production in May is set at 5.6 million, down from 5.7 million



26 week periods, April - September
Source: USDA Agricultural Marketing Service

AGE AFFECTS BUTTER purchases significantly. Housewives 45 years of age and older buy about 80% more than those under 35 years and nearly half again as much as those between 35 and 44 years. While the overall trend in butter purchases is up slightly since 1953, per capita consumption is less than in 1947, by 18% for older housewives and 30% for the younger.



Deming Turbine Pumps Perform Dual Service

Separately or Together

Pure spring water is used in processing those tasty chips produced by the Utz Potato Chip Company, Hanover, Pa. Purity of the water supply is evidenced by its acceptance by the Pennsylvania State Health Department. The same cool spring water is used for air conditioning units in the modern plant.

Purity of the water is protected with two Deming Vertical Turbine Pumps. Those water-lubricated units assure that the water supply will not be contaminated by oil or grease as none is used.

The two pumps can be operated as one unit, or separately, as required, for processing and air conditioning service. This is another example of the adaptability of Deming Vertical Turbine Pumps for a wide variety of applications.

(PLEASE PRINT)

THE DEMING CO., 556 Broadway, Salem, Ohio

Please send free copy of your Turbine Pump Bulletin No. 4700-51.

My name _____

Company _____

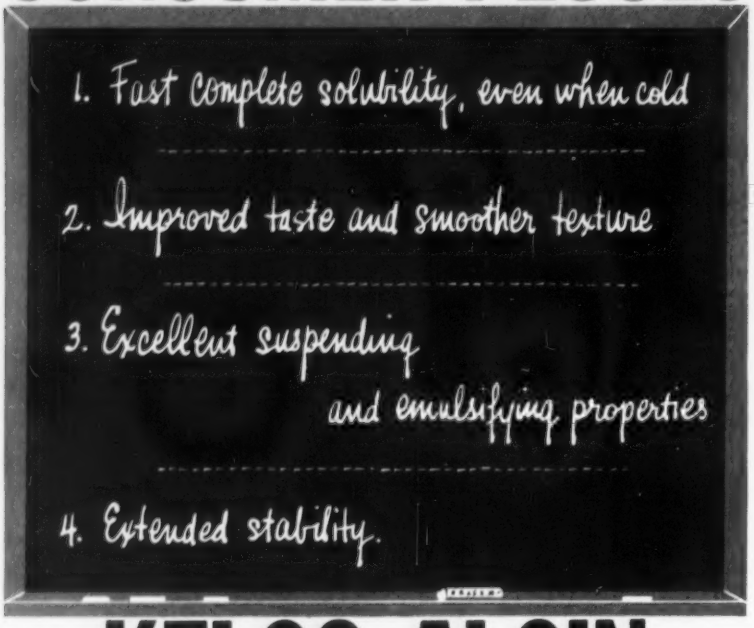
Street _____

City _____ *Zone* ____ *State* _____

☐ Please check here if you want the names and addresses of Deming Distributors in your area.

For more data, circle this page number on card at back →

Now give your dry food mixes these FOUR BIG CONSUMER PLUSES


1. Fast complete solubility, even when cold
2. Improved taste and smoother texture
3. Excellent suspending and emulsifying properties
4. Extended stability.

KELCO ALGIN COLLOID

With these 4 important pluses built into your product, you create far greater consumer acceptance and demand for your dry food mixes. Manufacturers of dry food mixes such as salad dressing, icing, milk shake, pudding, gel and meringue powders have much to gain by using a Kelco algin product to secure these important consumer benefits.

YOURS ON REQUEST: Technical Bulletins describing the food applications of Kelco algin colloids.

At your service, too, are our highly qualified technicians, ready to give individual attention to solving your product and processing problems.

Write or phone your nearest Kelco office today.

KELCO REFINED ALGIN PRODUCTS

KELCO COMPANY

120 Broadway, New York 5, N. Y.
20 N. Wacker Drive, Chicago 6, Ill.
530 W. Sixth St., Los Angeles 14, Calif.
Cable Address: Kelcoalgin, New York

Trends & Forecasts

in April but up from 5.5 million in May, 1956.

Fruit estimates generally are favorable. Peach production is estimated this season at 71.3 million bu., against actual 1956 production of 69 million bu.; pears, 32.8 million bu. this season against 31.9 million a year ago; apricots, 212,000 tons in 1957, against 195,000 tons last year.

Orange and tangerine estimates are 138.2 million boxes, up about 800,000 boxes from 1956 production. Lemon producers look for a crop of 14.5 million boxes, against 12.6 million boxes in 1956.

Only the grapefruit situation is on the downside in the new estimates—44 million boxes this year, off from 45.2 million a year ago.

Late spring potato outlook was for 29 million cwt., 19% above last year and 8% larger than average. The early summer crop estimate, however, is 4% below average, to 9.5 million cwt.

HORS D'OEUVRES

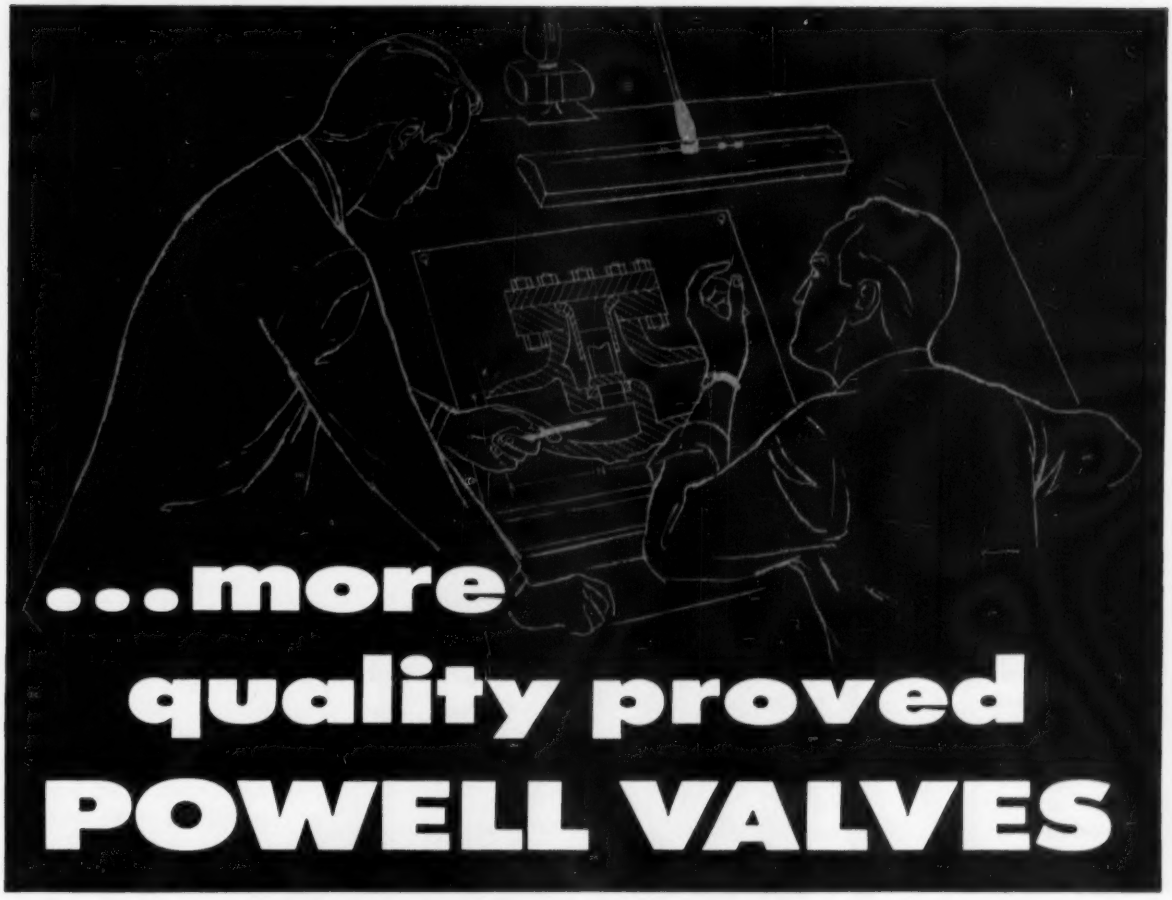
▶ **A Columbia professor has invented a gadget to measure the number and size of wrinkles in textiles. Just the tool for quality control in a prune plant.**

▶ Dreamers see the supermarkets of 2000 A.D. equipped with roof parking facilities for family helicopters and one-man flying platforms. Then shopping will be for the birds—and we hope they don't drop any heavy packages.

▶ "We shall do everything possible to reduce the cost of food and shorten the distance between producer and consumer." So says a Congressman food investigator from Brooklyn. Well, the Dodgers can produce a lot of cheap rhubarb in nearby Ebbetts Field.

▶ **Shoppers see packages at an angle as they look down the long rows of shelves in supermarkets. And that poses this problem: How to design containers with interesting corners.**

▶ Competitive business games between two groups of executives is the latest AMA wrinkle in training the big-decision makers. Educational—but a little like playing poker for matches.



...more quality proved POWELL VALVES

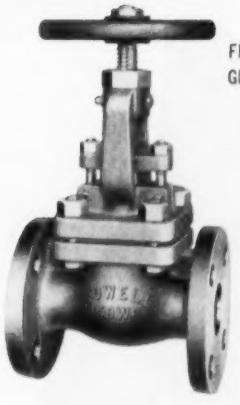
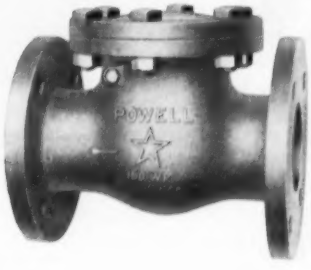


FIG. 2475—Stainless Steel O.S. & Y. Globe Valve for 150 Pounds W.P.

FIG. 2309 SW—150-Pound Flush Bottom Tank Valve with Powell Patented Seat Wiper.

FIG. 2456 SG—Large Stainless Steel Gate Valve for 150 Pounds W. P. Flanges conform to latest Standards.

FIG. 2433 SS—Large Stainless Steel Swing Check Valve for 150 Pounds W.P.



Designed for long life, designed for dependable service

Consult your Powell Valve distributor for all the facts about quality proved bronze, iron, steel and corrosion-resistant valves. No matter what the flow control problem, a Powell Valve can solve it . . . *better.*

THE WM. POWELL COMPANY, CINCINNATI 22, OHIO . . . 111th YEAR

For more data, circle this page number on card at back →

Report No. 2 of a series

I used to be all wet until I found

← For more data, circle this page number on card at back

Kathabar® systems eliminate wet floors, walls, equipment, and products!

Think what it would mean to you if you could eliminate condensation and its corrosion problems from plant processing and storage areas, and keep work spaces dry even when they're hosed down regularly for sanitation.

Maintenance savings alone would improve your profit picture for the year. Increased life of your structures and equipment would pay long-term dividends. Storage losses from condensation would be a thing of the past.

Such profits are immediately available to you in a Kathabar-engineered air conditioning system.

let's look at cases

This sampling of Kathabar installations will show you how effective and versatile a Kathabar system can be.

waterworks case

Pipe galleries in a huge waterworks are completely surrounded by water as cold as 40 F. A Kathabar system maintains the air at below the water dew point, year-round, and eliminates condensation. This system paid for itself in less than three years.

brewery case

In the new cellars of a large midwestern brewery, a Kathabar system is earning profits by elimating condensation. Washdowns are less frequent; dry cellars curb bacterial growth. As a bonus benefit, the Kathabar system kills 97% of all airborne micro-organisms. The brewmaster's temperature curve is followed precisely.

candy case

A candy manufacturer was plagued by condensation on the cooling slabs in his enrobing room. The moisture made his conveyor belt expand and jam. Chocolate and starch dust gummed up the belt and stopped production. A Kathabar system not only eliminated these problems, but increased production by 25%.

marine case

Kathabar systems in cargo ships and tankers provide anti-corrosion control, protection against cargo contamination, and ready gas freeing of all tanks. Kathabar systems quickly amortize themselves in maintenance savings, longer bulk-head life, better cargo protection, and faster turn-around.

other cases

Consulting engineers combine radiant panel cooling with Kathabar systems to dehumidify fresh air makeup. Colder water can be used in the panels, increasing efficiency without the danger of condensation.

Unitized Kathabar systems, using only electric power, dehumidify government storage caves. Completely portable, they are readily spotted to keep the dampest areas bone dry. Individual units avoid the fire hazard of a central system.

who uses Kathabar systems

Kathabar systems make profits out of air for these industries:

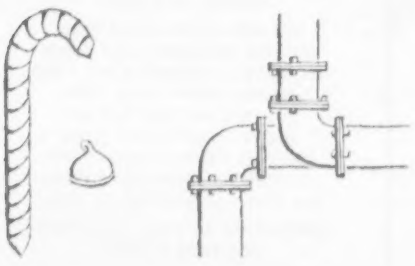
Atomic Energy	Machining
Breweries	Matches
Cake Mix	Marine
Candy	Meat
Cellophane	Offices
Cellulose	Ordnance
Cereals	Paper
Chemicals	Pharmaceuticals
Coffee	Plastics
Comfort	Printing
Compressors	Rockets
Cookies	Rubber
Electronics	Shellac
Explosives	Sugar
Film	Sanitaryware
Foundries	Testing
Gelatin	Textiles
Glass	Transformers
Glue	Transistors
Gum	Vacuum Tubes
Hospitals	Varnish
Hotels	Waterworks
Lacquer	Wire
Lenses	Yeast

how they use Kathabar systems

Many of these industries use Kathabar systems for eliminating condensation. Others use them to (1) obtain continuous air at sub-freezing dry bulb and dew points; (2) maintain spaces below 80 F and 55% RH; (3) deliver sterile air at specified dry bulb and dew point; and (4) improve drying processes.

send description of your problem

Air Conditioning and Drying Division
SURFACE COMBUSTION CORPORATION
2382 Dorr Street Toledo 1, Ohio



Kathabar systems by Surface

For more data, circle this page number on card at back →

New! FRUITIER! MORE FLAVORFUL EFFECTS!

FOR BEVERAGES AND ICE CREAM

AN ECONOMICAL NEW GROUP OF FRUIT FLAVORS WITH OTHER NATURAL FLAVORS

These new, remarkably true-to-type W.O.N.F. FLAVORS are *custom made* for the beverage and ice cream manufacturer. Long and diligent research into the processing of true fruit extractives and other natural flavoring ingredients now enables us to provide these and other industries with a selection of flavors that insures important economies, much greater convenience, and a measurable degree of flavor improvement in the finished products.

Our FRUIT FLAVORS WITH OTHER NATURAL FLAVORS are made from the finest natural fruit extractives concentrated to optimum strength for maximum flavor quality. They contain less than 50% of added flavor fortification derived from other selected fruits, essential oils and various botanical tinctures.

FRITZSCHE *Established* 1871 *Brothers, Inc.*

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES *and* °STOCKS: *Atlanta, Georgia, Boston, Massachusetts, °Chicago, Illinois, Cincinnati, Ohio, °Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, St. Louis, Missouri, Montreal and °Toronto, Canada and °Mexico, D. F.* FACTORY: *Clifton, N. J.*

ADVANTAGES

1. The finished effect — both in taste and aroma — is more natural than that produced by ordinary imitation flavors.

2. They are easier to use because they are standardized as to strength of flavor, color and acidity.

3. Being highly concentrated, they can be stored more easily and at lower cost. Bulkier juices require more space. Furthermore, to avoid spoilage, the latter must be preserved with alcohol which, in turn, reduces available working capital through the necessity of providing cash to cover alcohol tax requirements.

4. Since they are fortified and strengthened with other natural but less costly flavors, they are cheaper in actual use than are the corresponding natural juices.

Manufacturers of

FOUNTAIN and BOTTLERS' SYRUPS, ICE CREAM, MILK SHERBET and WATER ICES, CORDIALS and LIQUEURS are urged to request working samples of these flavors and prove to their own satisfaction their many important advantages.

•

FLAVORS AVAILABLE:

TRUE FRUIT APRICOT W.O.N.F. #26887
TRUE FRUIT BLACKBERRY W.O.N.F. #26888
TRUE FRUIT BLACK RASPBERRY W.O.N.F. #26893
TRUE FRUIT CHERRY W.O.N.F. #26890
TRUE FRUIT GRAPE W.O.N.F. #26891
TRUE FRUIT PEACH W.O.N.F. #26886
TRUE FRUIT PINEAPPLE W.O.N.F. #26889
TRUE FRUIT STRAWBERRY W.O.N.F. #26892
TRUE FRUIT WILD CHERRY W.O.N.F. #26894

ADDRESS US ON YOUR LETTERHEAD FOR TRIAL SAMPLES

← For more data, circle this page number on card at back

DEVELOPMENTS TO WATCH

Special

FOOD ENGINEERING

Service to Executives

First commercial application of radiation-preserved foods may start by 1960. So predicts the Interdepartmental Committee on Radiation Preservation of foods. QMC made preliminary studies of 80 foods last year, and in '57 is developing more specific data on certain ones. More than 70 firms and institutions are participating in the program.

Large economy food packages are starting a trend. General Mills' new 18-oz. Wheaties package costs the consumer 12% less per pound than the 8-oz. size. The 15-oz. Cheerios is 13% cheaper than the smallest. A majority of homemakers prefer the large jar of instant coffee, and "convenience of supply" is a more important reason than economy.

A weak antibiotic spray or dip solution keeps cheese from molding, Louisiana State U. researchers have demonstrated. Applied before waxing, the antibiotic permits faster aging at higher temperatures.

"Blubarb," something new in jam, has been made experimentally by USDA technologists. Rhubarb and blueberries are the raw materials. Neither alone is well suited for commercial jam. But combine the two in equal parts by weight and you have "a tempting wild berry flavor." Blubarb pancake syrup and pie mix are possibilities.

Butter has a new competitor—a high-protein, low-calorie, low-priced all-dairy spread developed by Roberts Dairy. Condensed nonfat milk, sodium caseinate, acidophilus culture, vitamins A and D, salt, and artificial color and flavor are ingredients.

Hard-to-handle, fragile potato chips now are packaged automatically in a Pennsylvania plant. A Wright machine picks bags from a magazine, places them on filling spouts, weighs in the right quantity, then heat seals bags—at 50 to 60 per min. without aid from an operator.

Designed to clean itself by air jets, a new dust collector with no moving parts reportedly cuts operating and maintenance costs. The Pulverizing Machinery unit consists of several vertical cylindrical air-filter elements suspended inside a housing over a hopper. Filters are cleaned singly by "backwashing" with 60-psi. air jetted through a venturi at top of each filter.

Continuous in-process control of qualities affecting refractive index is achieved with a new optical-electronic instrument. It is measuring citrus juice Brix in a Florida plant to an accuracy of better than 0.05 deg. The unit flushes the viewing prism with juice to keep it "clean."

Watch for some pioneering food company to conduct "plant tours" via closed-circuit TV.

TWO SIZES of bagged raisins are . . .

Creating The Package Spruces Up

WITH ALL EYES focused on revolutionary new flexible packaging materials, the older—and many times cheaper—standbys sometimes get the brush-off in a search for eye-pulling containers that will woo today's housewife.

So it's a matter of real interest when a food processor elects to stick with his original material during a packaging change—and only modify it with the aid of a modern plastic to achieve new heights of product protection, and convenience.

The processor is Sun Maid Raisin Growers of California, Fresno. The product and package: Economy-sized bags of raisins, now packaged in a kraft-polyethylene laminate.

Marketed in 2- and 4-lb sizes, these containers supplement Sun Maid's Standard 14-, 11-, and 15-oz. cellophane-overwrapped cartons—and offer a bulk outlet for the product at the retail level.

Why The Change?

Originally, the company put this "Market Day Special" out in plain, kraft-paper bags (65-lb. stock), with a thermoplastic strip inside the top for easy heat sealing.

With no other protection, the slightest pinhead holes in the paper led to product deterioration. And in hot climates, where extreme changes in temperature are common, the raisins "bled". The resultant escape of moisture spotted the bag, giving it a shopworn appearance. Also, the heavy kraft was too brittle to be reclosed easily and securely in the home.

Here, there was certainly room for improvement. And Sun Maid began an extensive series of experiments, in cooperation with Crown Zellerbach Corp., San Leandro, Calif., to find a solution.

The project took 3½ years of effort and involved a multitude of test samples, all aimed at correcting the packaging deficiencies with a lighter material. The answer, when it came, was simple.

Creates Light Laminate

Bleached kraft paper (40-lb.) was retained as the base material and was extrusion-coated with about ¾-mil of polyethylene (Tennessee Eastman, Bakelite, and du Pont).

Raisins, packaged in the new material, were sent to test markets located in areas of extreme temperature variation. Periodically, bags were drawn from store shelves and

. . . **PACKAGED** on T-shaped filling lines, as above. Key worker (center) checks weight of filled containers

Paper Bag for Modern Economy Pack

Dried fruit processor combines kraft with polyethylene for a strong, impervious package

returned to the company for laboratory evaluation. The result:

1. Bleeding is almost completely eliminated.
2. Tight heat-sealed seams and bag closures boost retention of product freshness.
3. Plastic coating retards evaporation of product moisture, and increases shelf life.
4. Handling damage is slashed, because of the sturdier package construction.
5. Raisins are easier to pour from the bag, because they do not stick to the plastic.
6. The softer-feeling bag is more readily reclosed in the home.

With the strong confidence that these facts established, the company switched 100% to the polyethylene-coated bags in May '57—a pioneering move in the development of better packages for dried fruits.

While it was necessary for Crown Zellerbach to build a new machine to produce the bags, Sun Maid's packaging lines and personnel were unaffected by the change.

Spoked Packaging Lines

The company has three bagging lines—each arranged in the form of a "T", and all converging at the case-off ends like the spokes of a wheel. Each line employs five workers.

Two operators fill bags at the head of the line and pass them to a check weigher (see photo). The weighed containers are then placed on a conveyor that moves them to the closing machine attendant. Here, bag top is pressed together and guided into a band-type heat sealing unit (Doughboy). The conveyor, stretching through the entire line, finally carries the bags to a case packer.

Design Changed, Too

While revamping the bag, Sun Maid also decided to freshen up its design. And the company now has a clean, graphic pattern in yellow, red, and blue that practically screams "attention"—a basic requirement on crowded grocery shelves.

In the re-design, changes were kept very subtle to avoid losing a long-established identity. The famous trade mark has been only slightly modified—and is prominently displayed in blue on a yellow background.

The words "Market Day Special" are emphasized in red, and the product name is snapped across in bright yellow letters on a broad blue band.

NEW PACKAGES & PRODUCTS

UNUSUAL package for individual servings of ice cream . . .

. . . produced at rate of 4500/hr.

Tetra-Pak Bows In As Ice Cream Package

Tetra-Pak, the unusual, pyramid-shaped package used to pack milk and citrus juice, is now being used for still another product: ice cream.

The package is formed, filled, and closed, on the Tetra-Oak machine (FE Sept., '53, p. 48 and Nov. '56, p. 146) at a speed of 4500 packages per hr.—and a saving of up to 40% over conventional packages.

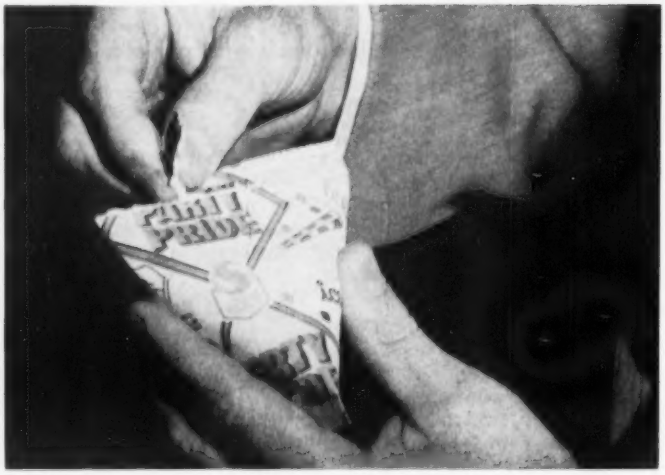
Regal Ice Cream Co., Seattle, is the first to utilize the tetrahedron for 3½ oz. individual packs of vanilla, strawberry, and chocolate ice cream. The Safeway Stores subsidiary introduced the package in Seattle in April, and will soon market it in Portland, Ore.

Label is Party Pride. Regal has also adopted the term Pyramid Pack to describe the unusual package.

The cartons are printed in three colors: yellow, red, and brown.

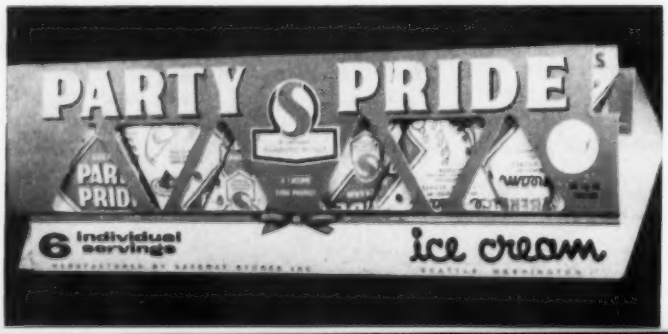
For easy opening, the top seam is perforated. To eat the contents, the consumer tears off the seam and squeezes out the contents gradually. (The machine also scores a corner which is torn off to pour or drink liquid contents).

The package was introduced to



TEAR STRIP opens package so cream may be squeezed out.

WINDOWED SLEEVE holds six individual servings.



Betty Crocker has a reason...

The reason starts with the product, with delicate flavors to be locked in and guarded... carefully blended oils that must not seep through... exact moisture content that must be maintained.

But *protected by Riegel* means much more... a complete, *engineered* system of packaging:

Product protection *always*, plus...

Paper tailored to run at high speed on automatic machines.

Paper made to your own specifications... plain, laminated, waxed, poly-coated, printed.

Paper that is made right, that will run right, that is priced right.

Hundreds of today's best-sellers benefit from Riegel's uniformly effective system of product protection. You can, too.
Write Riegel Paper Corporation, 260 Madison Avenue, New York 16.

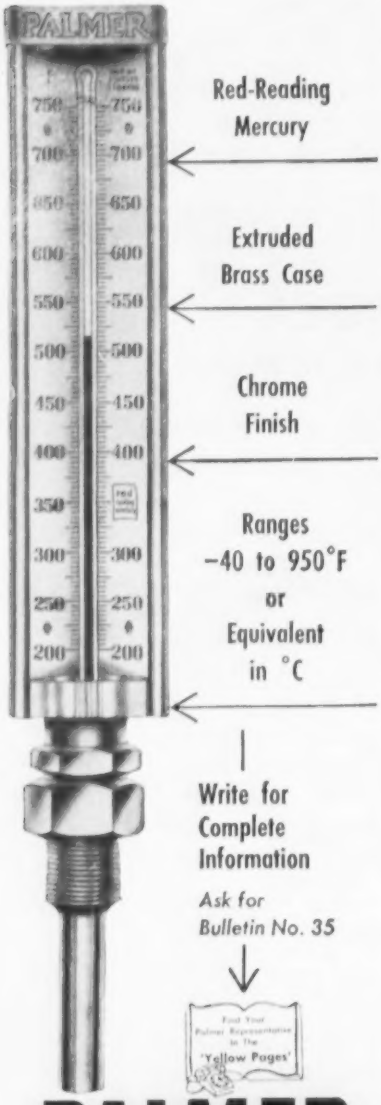
Riegel
PROTECTIVE PACKAGING PAPERS

New Betty Crocker Macaroon Mix uses special Riegel waxed glassine to keep the product fresh and flavorful. Packaged at high speed on Pneumatic Scale equipment.

Today's Modern Industry
Demands a Modern Thermometer

PALMER

RED-READING MERCURY THERMOMETERS



Write for Complete Information

Ask for Bulletin No. 35

Find Your Palmer Representative in The "Yellow Pages"

PALMER

THERMOMETERS, INC.
Mfrs. of Industrial Laboratory, Recording and Dial Thermometers
Cincinnati 12, O.

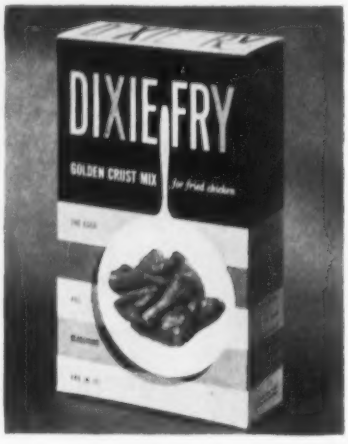
Packages & Products

boost sales volume as well as offer added convenience to customers. Regal is also currently providing Safeway with a 6-pack, with the individual cartons in a windowed sleeve. Another version of the 6-pack has the cartons arranged in a hexagon inside a closed polyethylene bag. Both versions are hand packed at present.

Crown Zellerbach Corp., Dobeckmun Co., International Paper Co., and Olin Mathieson Co., manufacture the Polyethylene coated paper from which the Tetra-Paks are made

The Swedish firm of Tetra Pak now has sales offices in San Francisco and Newark, N. J.

Circle 22A on Reader Service Card



Bright, New Carton Design

Prepared Products Co.'s Dixie Fry will soon reappear in a bright five-color package, developed through extensive consumer testing.

Formerly printed letterpress, the carton now utilizes the Lord Baltimore Press Fidel-I-Tone offset printing process. Here a fine line screen adds realistic detail to product photos, creating strong appetite appeal.

Circle 22B on Reader Service Card

Uses Cans for Cheese

Dixie Dairy Co., Gary, Ind., is now packing its Dixie brand cottage cheese in 16-lb., slip-cover containers. Each of the large reusable metal cans replaces four fiber containers.

The dairy places the cheese in a plastic bag before packing it in the can. The can is manufactured by American Can Co.

Circle 22C on Reader Service Card

Prune Butter in Glass

Max Ams Co. is marketing prune butter in a wide-mouth with a colorful foil label. The 17-oz. jar allows easy product removal and resealing. Shape of the jar is ideal for stacking.

Container is manufactured by Owens Illinois Glass Co.

Circle 22D on Reader Service Card

Markets New Edible Paste

Recently marketed by Buitoni Co. is a new edible paste called Minus Amid. The new product is unusual in that it has less starch than is usually present in such pastes.

Protein content has been increased by adding germs of wheat and yeast. In addition to its nutritive value, the paste has a limited value as a dietetic food, and absorbs less water when cooking.

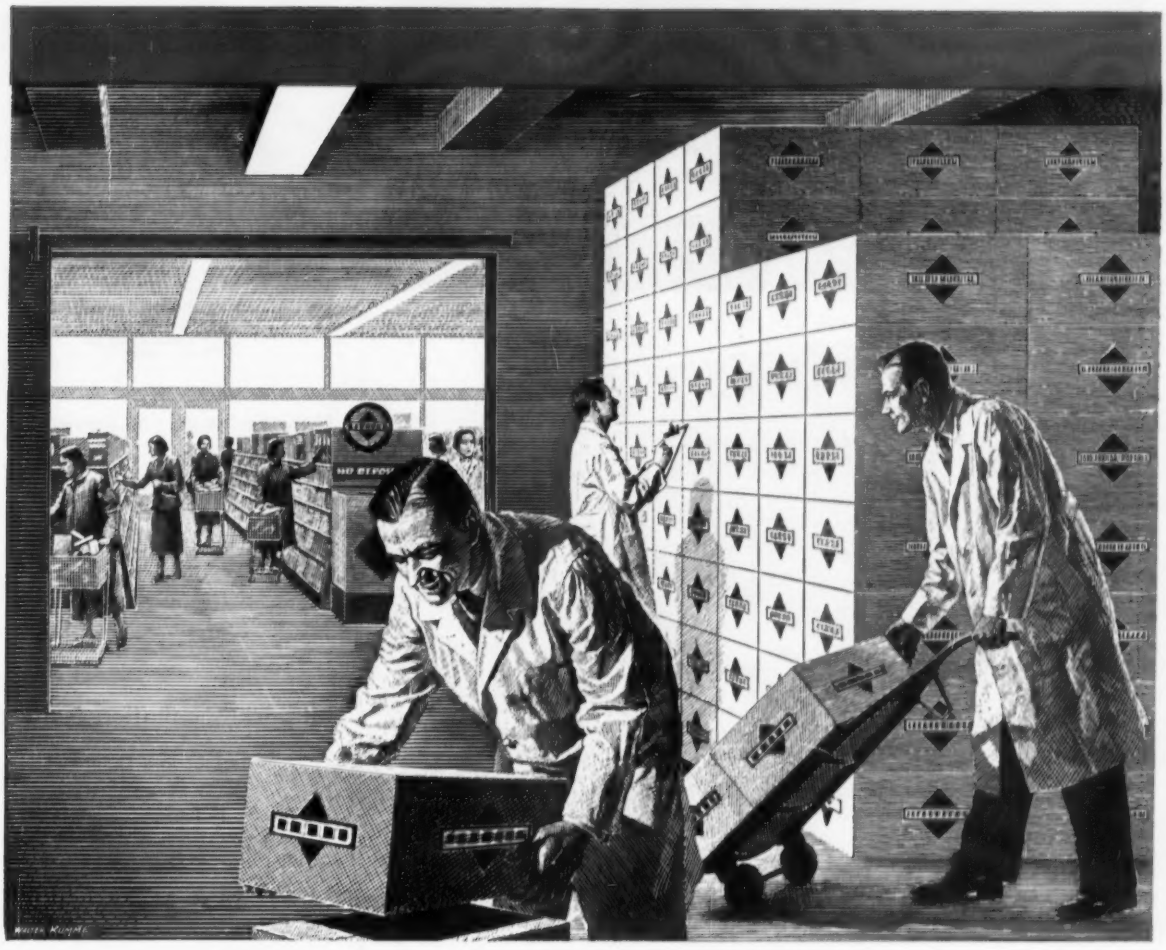
Circle 22E on Reader Service Card

Vac-Packs Ready-Cooked Sausages in Cans

Latest addition to Swift's Premium canned meat line is Brown 'N Serve Sausage. Vacuum-packed in a rectangular, key-opening can, the sausages are pre-cooked and pre-shrunk. Each 10 oz. can holds 10 links.

Distribution is national.

← For more data, circle this page number on card at back



WIN IN THE BATTLE OF BRANDS

There are more than 150,000 brand names registered in the United States—competing for the customer's attention.

In this "battle of brands" brightly printed Gaylord Boxes are a vital link in the chain of visual impressions that pays off in sales.

This is true because Gaylord excels in printing. Gaylord has the specialized experience and equipment to make quality boxes do their selling best—with your brand name accurately expressed in eye-catching colors.

Put Gaylord Boxes on your selling team. Call your nearby Gaylord office.

Gaylord Boxes

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

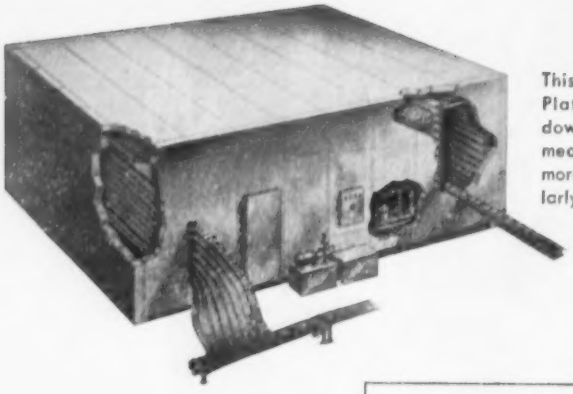
DIVISION OF CROWN ZELLERBACH CORPORATION

For more data, circle this page number on card at back →

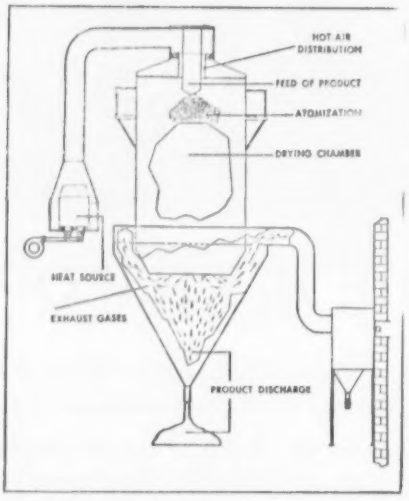
PERFORMANCE IN FOOD PROCESSING —GUARANTEED BY PROCTOR

From −55°F. to 240°F. For Liquids, for Solids.

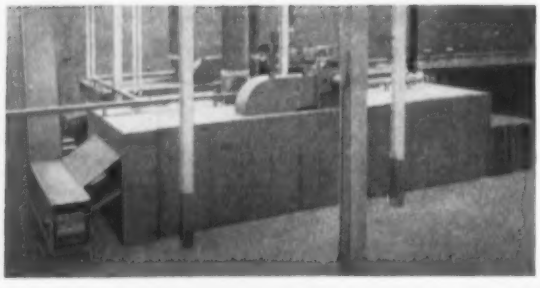
Every Proctor product for the Food and Process Industries carries the famous Proctor performance guarantee, based on wide experience and a careful analysis of product requirements. Proctor's new Continuous Plate Freezer too, is guaranteed for the same high production rates and top product quality—it too features the same reliability, the same operating economies, the same product uniformity found in all Proctor products.



This Proctor Continuous Plate Freezer operates down to −55° F.! This means quicker freezing, more production of regularly shaped packages.



Proctor Spray Dryers are designed and built to suit the requirements of your product—from pilot plant scale to large production units.



Proctor Drying Ranges are built to achieve uniform drying—the key to product quality.

PROCTOR & SCHWARTZ, INC.
PHILADELPHIA 20, PA.

Proctor

Packages & Products

New Package for Ravioli

Turri Ravioli Co., Detroit, is packaging its ravioli and meat sauce in a new style paper container designed by Sealright Co.

Ten frozen ravioli and 3 oz. of meat sauce are packed in the round, plastic coated carton. A windowed, slip-on lid adds impulse appeal.

Circle 24A on Reader Service Card

Introduces Imitation Nutmeg

Prompted by blockade and shipping shortages in wartime, Knickerbocker Mills Co. has maintained a program to develop acceptable substitutes.

The firm's laboratory technicians has successfully imitated cinnamon, pepper, and mace. Latest spice to be synthesized is nutmeg. Selling at ⅓ the price of real nutmeg, the imitation is reported to closely parallel the spice in flavor, texture, and aroma.

Circle 24B on Reader Service Card

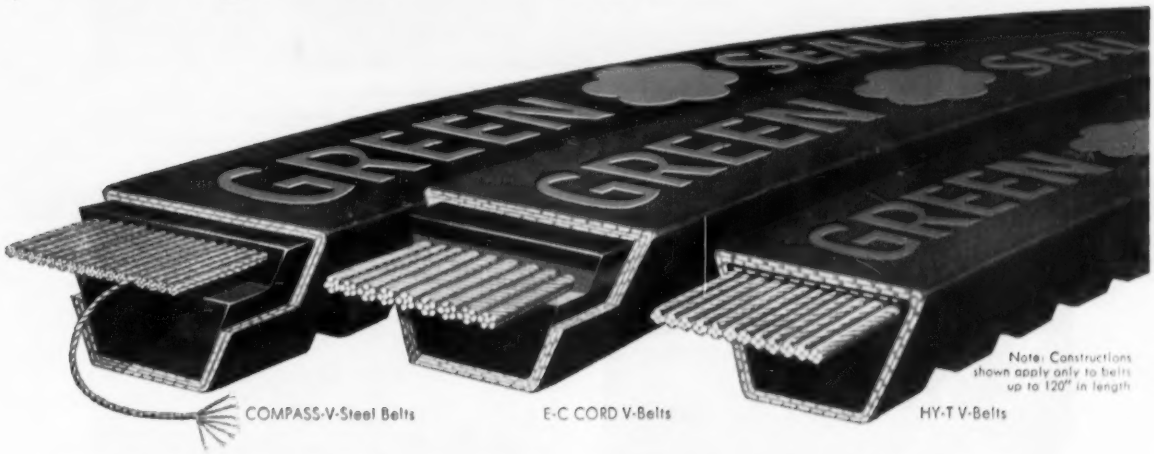
Dietetic Cookies Debut

Directed at the weight-conscious consumer are Dietetic Food Co.'s new Zebra cookies. No sugar is added to the product. Sorbitol is used as a sweetening agent.

Striping of the cookies is accomplished by separating layers of chocolate and vanilla.

Each cookie packaged in the 3½-oz. carton contains 29 calories.

Now--V-Belts with the Green Seal solve the major multiple drive problem



The Green Seal stands for true dimensional stability in V-belts. And with Green Seal dimensionally stable belts you can be sure that matched sets are truly matched and will stay matched–that mismatching (the biggest problem in belting multiple drives successfully) is a thing of the past.

The key to dimensional stability lies in the tension members of the belt. For many years, steel cables as developed by Goodyear were the only length stable load carriers, but now they have been joined by synthetic cords, thanks to the amazing Triple-Tempered 3-T process.

The 3-T process is an exclusive method of tempering the cord with Tension, Temperature and Time for maximum strength and minimum change in dimensions. This assures no change in length during storage plus greatly increased shock- and stretch-resistance on the drive.

The end result is smoother, longer-running teams of belts that give you maximum, trouble-free, horsepower hours at minimum cost. What better reason for specifying V-belts with the Green Seal?

DIMENSIONALLY STABLE V-BELTS with the GREEN SEAL by

GOODYEAR

THE GREATEST NAME IN RUBBER

The Goodyear Tire & Rubber Company, Industrial Products Division, Dept. 794, Akron 16, Ohio

Please send me more information about how V-Belts with the Green Seal solve the major problem in belting multiple V-belt drives.

Name_____

Company_____

Street Address_____

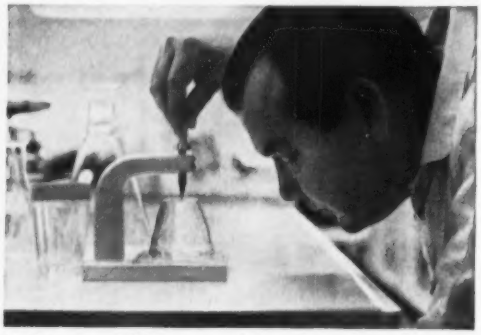
City_____ Zone_____ State_____

Compass, E-C Cord, Hy-T, Green Seal–T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

One look at the huge, sprawling buildings at one of the Exchange Products plants and you know that big things are happening inside. For here *citrus* is king. Trucks pour in with fresh fruit from groves all over California and Arizona. Conveyer belts hum along in every direction. And Exchange products are shipped to nearly every part of the world.

Why 'Exchange' products serve you better

Utmost cleanliness is the watchword at Exchange Products plants. Everything has that "just washed-down" look. Every four hours, extraction equipment is completely cleaned. Every third day, the entire plant closes down for a thorough washing.



Exchange quality is assured by constant checking in extensive testing laboratories. In fact, rigid quality controls have been set up *throughout* the plant to make sure that every product measures up to Exchange quality. Sunkist produces more than 400 different citrus products.

The world's largest citrus research department is maintained by the Sunkist Growers to develop new growing methods, to improve manufacturing processes, and to perfect better products. Today, with a backlog of more than 60 years experience, Sunkist has accounted for 118 separate U.S. patents.

Just three of many Exchange products are *Exchange Preserver's Pectin*—guarantees a more uniform finished product; *Exchange Low Methoxyl Pectin*—jells *without* sugar, tasteless, controls "weeping" in pies; *Exchange Lemon Juice*—brings out natural flavor of *any* food. Superior acidulant, excellent anti-oxidant.

Sunkist Growers

PRODUCTS DEPARTMENT • ONTARIO, CALIFORNIA

Distributors for

Exchange Lemon Products Co., Corona, Calif. • Exchange Orange Products Co., Ontario, Calif.

Packages & Products

New Wraparound Carriers

A family of hand-sized, three-can wraparound carriers are now used by Cantrell & Cochrane Corp. for its canned soft drinks. Easily grasped in one hand, the carriers are die cut to fit over the cone-top cans in an automatic packaging operation. They are glued at the bottom.

Color on the can and carrier match and is related to the flavor for quick identification. The carrier is made of white patent coated board with added wet strength to withstand refrigeration.

Circle 27A on Reader Service Card

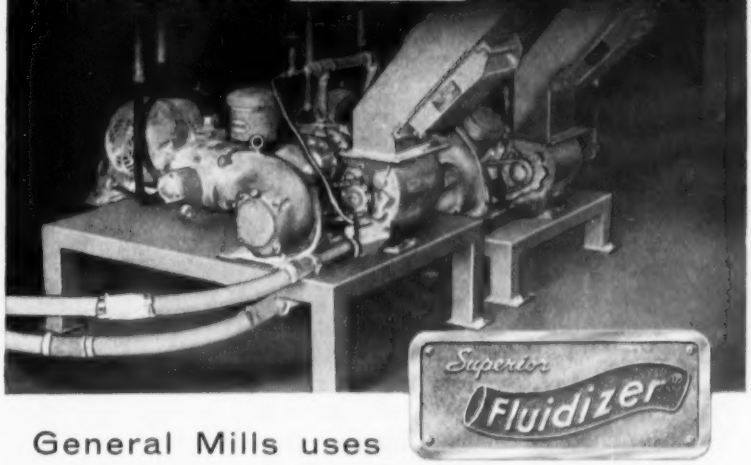
Bag Chips in Foil

Potato Chips packaged in laminated aluminum foil bags are reported to be rapidly gaining in popularity in Texas and New Mexico and other Southwest states.

Mead-Co Co., Lubbock, Texas, is using the foil for its Bunny and Mead lines. The bags are made of Alcoa Wrap laminated to 8 lb. tissue laminated to waxed, one-side bleached glassine liner.

Circle 27B on Reader Service Card

MIX INGREDIENTS FLOW LIKE FLUID...
through industry's most advanced bulk handling system!



General Mills uses Superior "FLUIDIZER" to convey dry cake mix and cereal ingredients

SEVEN SUPERIOR "FLUIDIZERS" are handling bulk materials in-process at General Mills' new breakfast cereal plant in Toledo, Ohio. Carefully planned to fit into the company's modernization program, the "FLUIDIZER" systems handle milk solids, cocoa powder, oat flour, corn cones, blends and other ingredients. Fed from screw conveyors and ribbon mixers, the "FLUIDIZERS" convey the materials throughout the processing systems via 1½", 2", and 3" tubes. The "FLUIDIZER" is paying off at General Mills in improved sanitation, continuous processing, more efficient production.

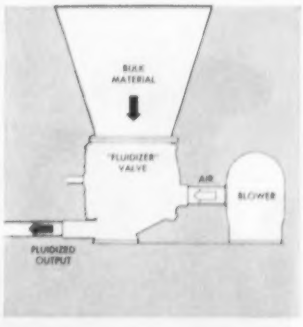
ARE ANY OF YOUR PRODUCTS LISTED HERE?

Sugar • Cocoa
Instant Powdered Potatoes
Cracked Wheat • Malted Milk
Dried Yeast • Dried Whey
Leavening Agents • Soda
Trisodium-Phosphate
Loose Ground Coconut
Whole and Non-fat Powdered Milk

These, and many more have been successfully fluidized. Call or write for further information on the Superior "FLUIDIZER," its advantages and application to your bulk handling problems.

THE VERSATILE "FLUIDIZER" SYSTEM consists basically of the "FLUIDIZER" valve, source of air and conveying line. It is available in a wide range of unit sizes from a simple assembled package to a completely engineered system with switching stations, remote and automatic flow diverters, pressure switches, and many other Superior accessories and services.

If you handle dry, powdered solids, the Superior "FLUIDIZER" may be the answer to your problems of rising operating costs and more rigid sanitation standards. Contact Superior today.

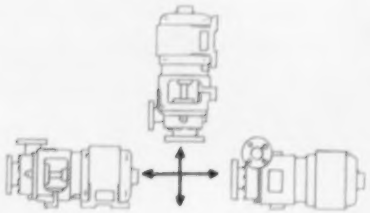


PROCESS MACHINERY DIVISION
Superior SEPARATOR COMPANY

121 South Washington, Hopkins, Minnesota, WEst 8-7651
919 D East California St., Pasadena, California, RYan 1-9724
420 Lexington Avenue, New York, New York, LExington 2-8878
221 North LaSalle, Chicago, Illinois, FRanklin 2-3181

For more data, circle this page number on card at back →

you get



versatility too

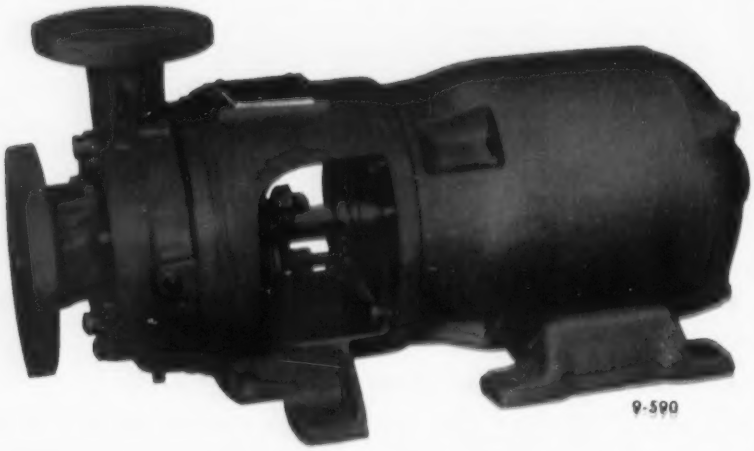
Plant engineers and operating personnel who have had experience with Ingersoll-Rand Motorpumps have found ease of installation of special importance and an extra advantage over and above Motorpump efficiency, dependability, stamina and low overall maintenance.

Motorpumps are compact to save space, they operate in any position, they present no alignment problem, need no baseplate or coupling.

These are important points to consider when you want a pump. See your local Ingersoll-Rand representative or write for the complete bulletin on Motorpumps.

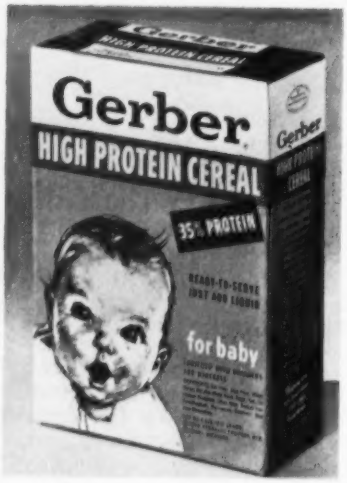
Ingersoll-Rand

11 Broadway, New York 4, N.Y.



MOTORPUMP sizes ¼ to 75 hp / capacities to 2800 gpm / heads to 650 ft

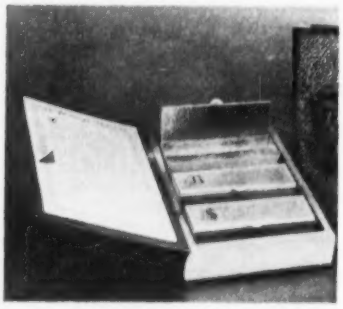
Packages & Products



35% Protein Food for Baby

High Protein Cereal has been added to the Gerber Products Co. line of baby foods. A combination of oats, wheat, soy beans, and yeast, the product provides a total protein content of 35%.

Priced slightly higher than the other Gerber cereals, it is packaged in the same 8 oz. carton.



The Story of Cheese

A novel package for cheese is a folding carton built like a book designed for Mission Pak Co., Los Angeles.

The carton opens to disclose a brief history of cheese printed on the inside front panel. The body of the book holds three foil-lined cartons, each containing a different type of cheese.

The processor has marketed a series of "volumes" of various cheeses.

Carton is produced by Continental Can Co.'s Gair Boxboard and Folding Carton Div.

Circle 28A on Reader Service Card

Check the cost and see...

THERMO KING

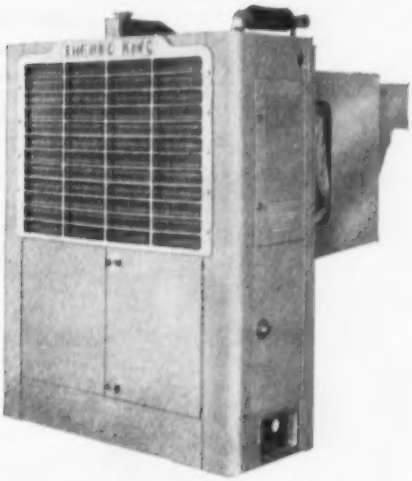
TRUCK REFRIGERATION COSTS LESS

- *to own*
- *to operate*
- *to maintain*

It costs less to own because it's produced in volume by the leader in the truck refrigeration field. This means a lower selling price.

It costs less to operate because of its exclusive start-stop system. It doesn't just idle down—it shuts off the engine completely when your load has reached the proper temperature, and starts again when needed.

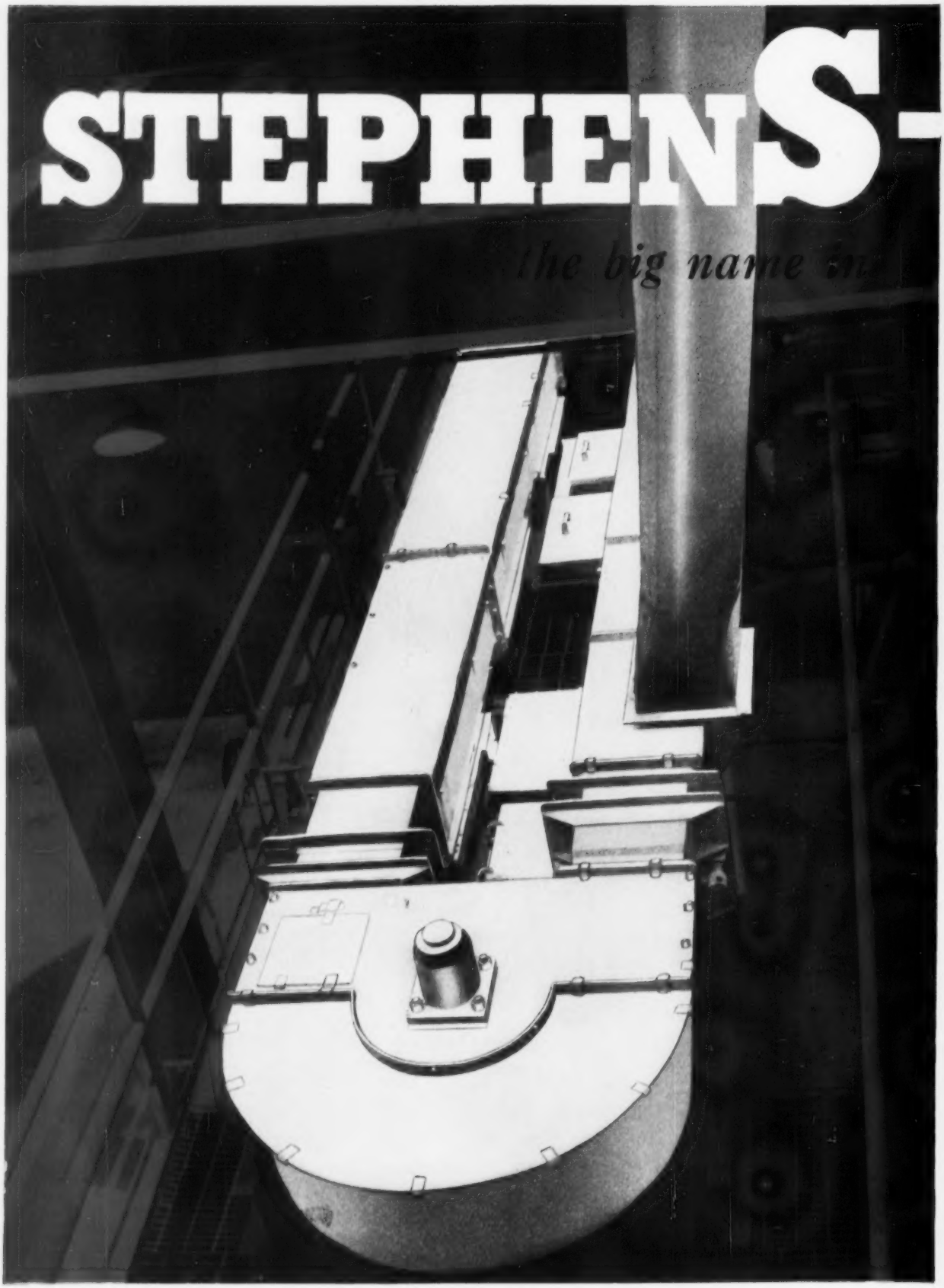
It costs less to maintain because 20 years of engineering advancement has perfected the unit with fewer parts, maximum cooling, and trouble-free operation. Your best truck refrigeration buy is **THERMO KING.**



NATIONWIDE SERVICE: Thermo King service stations on all important truck routes in United States, Canada and Mexico

THERMO KING CORP., 44 S. 12th ST., MINNEAPOLIS 3, MINN.

For more data, circle this page number on card at back →



← For more data, circle this page number on card at back

-ADAMSON

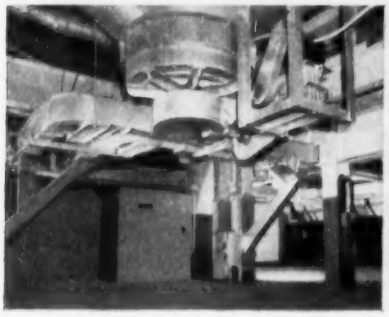
food product conveying systems

When it comes to conveying bulk products, the food industry poses a unique problem. In addition to moving bulk foods swiftly and steadily at lowest cost per ton, sanitation is a factor to be reckoned with.

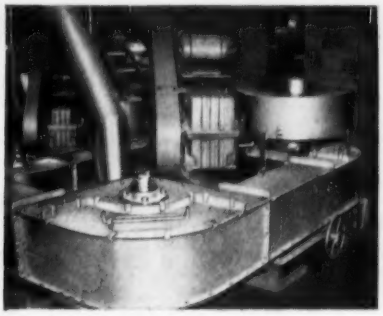
How to move these food products economically, without contamination, is an art well known to STEPHENS-ADAMSON engineers who have been doing it successfully for many years. Their familiarity with all phases of food processing operations insures the swiftest, most logical engineering solution to any bulk material handling problem.

Three complete S-A plants turn out a broad range of manufactured conveying products from which the engineer may draw in making up tailored systems that exactly fit any need.

An examination of your conveying requirements by S-A specialists will cost you nothing, yet may save you many dollars through more efficient, lower cost conveying methods. Call or write today.



Twin runaround horizontal REDLER conveyors are fed by circular bin discharger in foreground. This system also includes bucket elevators and screw conveyors. It operates six days a week, twenty-four hours a day.



A large REDLER horizontal conveyor handles malt. REDLER conveyors and elevators are made in many designs by S-A. They will handle a great variety of materials, completely free of contamination, within their steel casings.

This system screens, blends, and feeds material to an intermediate storage hopper by shaker screen. REDLER conveyors like the one shown here need little space and will move pulverized, granular, small lump, or flaky materials in any plane.

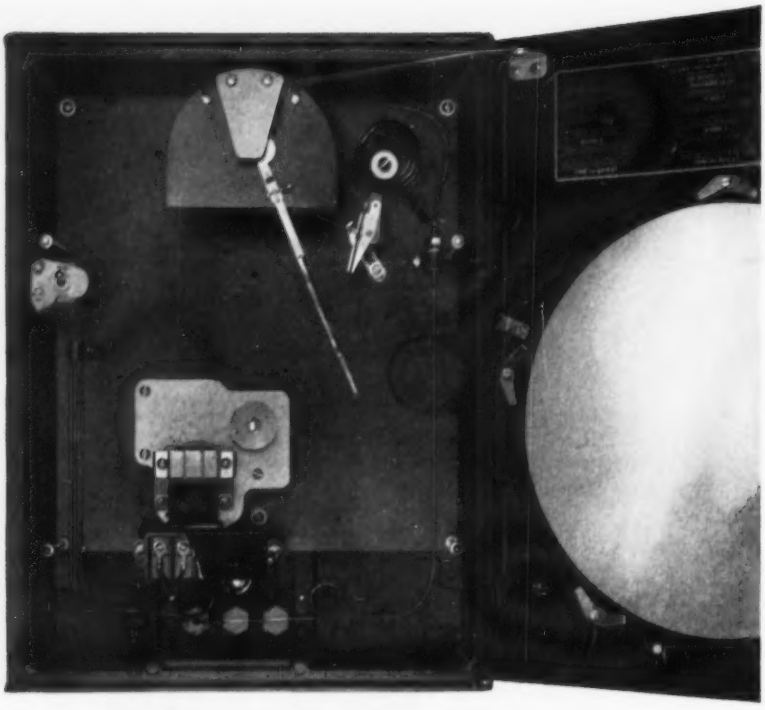
STEPHENS-ADAMSON MFG. CO.

17 RIDGEWAY AVENUE, AURORA, ILLINOIS
LOS ANGELES, CALIFORNIA
BELLEVILLE, ONTARIO

S-A manufactures a wide range of material handling products in three complete plants in U. S. and Canada.

- Belt Conveyors
- Belt, Pan & Plate Feeders
- Ship Loading Boom Conveyors
- Stacking Conveyors
- Storage & Reclaiming Systems
- "Natural Frequency" Vibrating Conveyors
- REDLER Conveyor-Elevators
- ZIPPER Conveyor-Elevators
- Conveyor Belt Cleaners
- Headshaft Holdbacks
- Grizzlies & Screens
- Centrifugal Pilers
- Bin Gates & Tunnel Gates
- Car Pullers & Spotters
- Bucket Elevators
- Skip Hoists
- SEALMASTER Ball Bearing Units

For more data, circle this page number on card at back →



Simplicity... you'll find it in Brown Pressure Gages and Thermometers

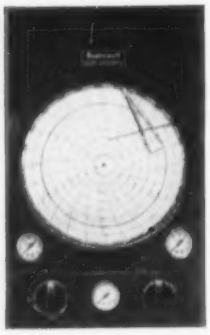
Clean, simple design—simplicity that minimizes operating or maintenance difficulties—sets Brown Pressure Gages and Thermometers apart. These rugged instruments use direct, simple linkages . . . very few parts. Basic components for both thermometers and pressure gages are interchangeable, and cases are identical.

The many narrow spans available, together with the large charts and scales, give you full use of the high accuracy of these instruments.

Brown Pressure Gages are available in many ranges, with a minimum of absolute zero and a maximum of 4,000 psi. Brown Thermometers are particularly suitable for the intermediate temperature range, extending from —125 to 1000 F.

Your nearby Honeywell sales engineer will gladly give you complete details on these instruments as they relate to your particular requirements. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pa.—in Canada, Toronto 17, Ontario.



Simplicity . . . Versatility, Too

A wide variety of models, ranges and accessories are available for exact matching of Brown Pressure Gages and Thermometers to your specific applications.

MINNEAPOLIS **Honeywell**

BROWN INSTRUMENTS

First in Controls

Ole Sage Episode

"The advantage of forced retirement at a fixed age hasn't been established," declared Ole. "With regular medical exams, and the like, the producing capacity of many a man is extended."

How Can We Stop the 'Past-40 Discard'?

IVAN C. MILLER
"Food Engineering"

BARNEY HASBROOK led off at the end of the Guff and Gripers luncheon club meeting with the suggestion, "We have two parts of the same subject to cover today. One, how to improve the job situation for those past 40 who are unemployed and two, how to use the values of those who, though forced to retire, are still able to give productive labor to industry and who prefer to do so."

"Let's start on the first one," cut in Batt Bulwark. "Ole, you take over, but give us action without statistics, we'll take your word for the fact without the figures."

"There are a number of ways," responded Ole, "by which the situation might be improved. Let us start with the most undesirable method—the one, however, which is sure to be adopted if none of the others are employed.

"When the number of those unemployed who are past 40 become sufficiently powerful politically (and that time is approaching rapidly), the government will provide more and more income to the unemployed. The cost will have to be borne by everyone who earns or has income from capital. Each year the tax will become more staggering."

"Too much government as it is," boomed Batt, "so tell us Ole how we can keep the government out."

"We are the government," reminded Ole, "we make it what it is, and don't forget that one of the most potent catalysts speeding government change is our indifference. Incidentally," Ole then pointed out, "a few changes in some of the existing government regulations and rulings, state as well as federal, could help the past-40 employee situation, and the combined influence of all of us certainly could help introduce these changes.

"Even though older workers may have fewer accidents on the average they do require a longer time to recuperate. Accordingly, some states raise compensation rates required. If these states only would, they could change disability compensation laws and unemployment insurance requirements which for many organizations now stand in the way of hiring older workers.

"Uncle Sam and these states you mention, Ole, should get together," suggested Milt Sorenson, "and work out regulations so that industry isn't penalized for hiring past-40's."

"Which is saying," chuckled Barney, "it's up to us—we the PEEPUL."

"It seems to me", contributed Y & G Specialty Foods Company's Tom Watson, "that group life insurance plans as well as pension plans limit hiring of the older group. Insurance companies might find it more profitable in the end as well as more human to make the changes that encourage employment of the capable older workers."

"Even if pension insurance provisions aren't changed," commented Barney, "it might help if the treasury department at Washington should allow a sliding scale tax reduction based on age groups. This could be sufficient to offset the higher insurance costs of employing oldsters, and thus remove at least one obstacle to their employment."

"Yeah, there you go," blurted Batt, "isn't it a fact that if you cut taxes for one group you add taxes to all the others. In this case who pays?"

"Don't forget," explained Ole, "more of those past 40 will then earn incomes and pay taxes to greatly help absorb the difference. Also these additional workers would contribute to increased production which in itself generates more tax money as well as more total profit and thus more tax yield. In any event the tax should be less than would otherwise be required to maintain a great many older workers in idleness."

"It seems to me," Si Worth ven-

"Until we reorient toward the needs of all people, conditions will worsen"

tured his opinion, "we shouldn't overlook the influence of the unions, which by and large reflect the views of the membership. Unions have been demanding many social benefits and getting them, too." Si then grinned. "No doubt they will get more.

"One of the recent so-called social accomplishments of the unions was supplementary unemployment benefits, compensations from which will, on occasions, aid the young and most recently employed members of industry, but rarely if ever the oldsters. If the union'd think of the whole problem and not just of the interests of the active young, results might be far-reaching.

"Now, just what could the unions do and furthermore what would they do if they could?" belittled Batt.

"As we have pointed out repeatedly in the past," explained Ole, "retirement and pension plans are based on chronological actuarial statistics—not physiological influences. We, and the insurance companies, too, know about the vast differences in people at various ages. But we have not taken these facts into account in our social planning."

When Ole then reached for his notebook, Batt bellowed the warning, "Nostatistics, Ole!"

"**No, Batt,**" explained Ole as he unfolded a clipping, "this comment of J. R. Cominsky, which appeared in the January '57 issue of Personnel Journal, quotes no statistics, but it does seem to be to the point. It is short so I will read it: 'Not only have we confused chronological and physiological age to the detriment of our people, but we still are thinking, talking and acting in terms of a youth-oriented society, with an unbalanced concentration on the needs and aspirations of the young to the exclusion of the older part of our population. Until our youth-oriented society becomes reoriented toward the needs of all people, young and old alike—until that is of basic consideration in all our social planning—conditions will worsen rather than improve.'"

"What should industry itself do to help?" asked Si.

"Let's cover that," suggested Ole, "as we review industry's forced retirement situation, which, as a part of the problem of all employables past 40, will also be disposed of by the government through the costly tax way if it is not adequately handled by those involved—management of industry, insurance agencies, employees and unions."

"Let us have hope and faith", pleaded Si Worth, "that neither of these problems will have to be settled by government and paid for by higher and higher taxes. So, Ole, what are the alternatives?"

"**First of all,**" Ole enumerated, "the advantage of forced retirement for all employees at any fixed age has not been established. Most of you know that frequent medical examination, sometimes accompanied by rehabilitation training has, in recent years, extended the producing capacity of many employees. This proves, it seems to me," Ole continued, "that age alone should not remain the basis for discarding them."

"I know just what J. J. Talmerage would say if he were here today," exploded Batt, "He'd say 'what about me and my small plant? I can't afford regular medical examinations or training programs either.'"

"Frequently groups of small plants in the same area have solved these problems satisfactorily," countered Ole, "by cooperative methods.

"Rehabilitation training for other jobs," he assured them, "has proved successful and also at reasonable cost, by several programs conducted by the Labor Department of New York State. Many 'unemployables' who have passed the age of 40 have thus been returned to the labor force in companies where the newly-acquired skills were much needed.

"But let's get on: Some companies retire all employees at a fixed age, but then rehire them, at their choice, on a year-to-year-basis, often replacing them in different jobs, which they can execute more satisfactorily."

"To me it has always seemed a costly waste" commented Milt, "to lose skills acquired at considerable cost through decades. When possible, I'm convinced, the knowledge and artistry of the oldsters should be passed on to the beginners. A good training plan, I mean!"

"Usually," ventured Si, "some of the financial responsibilities drop away as an employee nears retirement age. Why not keep them working and pay them in proportion to the value of their work? It seems to me most would prefer it."

"That's an out that will only be made workable after many a bitter battle at the bargaining table," was Sorenson's prophesy. "No doubt, however, that some companies and unions could reach agreement."

"**I've said before and I say it again,**" interrupted Batt, "I don't want a bunch of old cripples working for me. Nevertheless, if any of them can earn a living working for someone else, I'm all for it.

"As Ole has pointed out," he continued, "whatever they produce adds to the prosperity of the country and relieves the cost of supporting them in part or entirely by other means.

"Now, living on and spending Social Security income is another thing," Batt insisted, "it's like taking change—nickels and dimes and quarters out of one pocket to shift to another—and losing part in the handling.

"So I'm 'agin' the regulations that makes Social Security a charity. Though you've been forced to save for years, you can't draw savings if you are willing and able to work and thus aid the country by earning all the income you can and adding your share to production. In my opinion, to limit Social Security payments to those who will earn no more than a fixed small amount makes Social Security a charity."

"That brings us to a recognized social advancement," announced Ole, "which is nevertheless a major cause of it all—pension plans—and the increased cost with each advance in the age at which a new employee is hired."

"**What's the out?**" asked Batt.

"There are several," Ole assured, "among them: Vesting by the company, area vesting, and industry-area vesting. A vested profit-sharing plan provides another method."

"I'm dumb and dense," grumbled Batt, "how about explaining each one of these with examples?"

"I know of cases in our industry where some of these have proved satisfactory to everyone," Ole promised, "but it's too late to go into details today. Let's do it next time, and after that we can drop the old age problem for some of the many others in our industry."

"So next time," concluded Milt, "we'll hear some case history solutions in the food industry."

Can We Help You Reformulate to Put More Eye-Appeal in Your Products?

National CERTIFIED FOOD COLORS

Allied Chemical

Making good food look better has been our business for over 50 years.

Working within the letter and spirit of present Certified Food Color Regulations, we have helped many processors to step-up the appetite appeal of their new and existing lines. Right now our Technical Service Laboratories are better staffed and equipped than ever before to give you prompt, practical help on re-matches or new formulations.

Of this we are sure: Users of National Certified Food Colors will not lose a single dollar's sales for want of eye-compelling color in their processed foods.

Can we serve you?

CERTIFIED COLOR DIVISION
NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR ST., NEW YORK 6, N. Y.

Boston • Charlotte • Chicago • Philadelphia
Portland, Ore. • San Francisco • Toronto

JACK B. RINCKHOFF (right), Chief Engineer, Sulphuric Acid & Phosphates Dept., Chemical Construction Corp., N. Y. City. Left, Michael De Piano, New York Cooper Alloy Representative.

RINCKHOFF OF CHEMICAL CONSTRUCTION

answers 3 questions on Cooper Alloy Valves

Q. Mr. Rinckhoff, in specifying equipment for the H_2SO_4 plants that Chemico constructs around the world, what Cooper Alloy valve models do you buy most of?

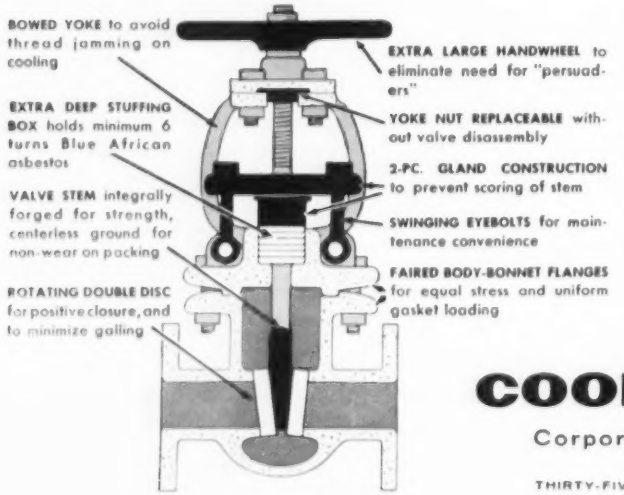
A. Over 80%, I'd say, are OS&Y type gate valves, in sizes 1"to 8"

Q. What's your most important reason for buying Cooper Alloy valves?

A. Availability. Your chain of distributors across the country and in remote parts of the world is of great importance to us. In foreign construction we have often specified Cooper Alloy because of this all-important availability.

Q. What about design and quality?

A. Vital. Valve design determines performance, and our specifications are rigid. As a construction company, we can't afford to jeopardize our reputation by installing questionable equipment. Cooper Alloy valves have passed our tough specs, and have my approval for all severe construction applications.


BOWED YOKE to avoid thread jamming on cooling
EXTRA DEEP STUFFING BOX holds minimum 6 turns Blue African asbestos
VALVE STEM integrally forged for strength, centerless ground for non-wear on packing
ROTATING DOUBLE DISC for positive closure, and to minimize galling
EXTRA LARGE HANDWHEEL to eliminate need for "persuaders"
YOKE NUT REPLACEABLE without valve disassembly
2-PC. GLAND CONSTRUCTION to prevent scoring of stem
SWINGING EYEBOLTS for maintenance convenience
FAIRED BODY-BONNET FLANGES for equal stress and uniform gasket loading

A VALVE DESIGNED FOR STAINLESS!

The Cooper Alloy valve is not an adaptation of earlier brass and iron patterns. Cooper Alloy, with over 35 years of experience in handling stainless steel, created a valve *designed to be cast in stainless!* **Check the Special Design Features shown at left.**

As the little CA man below is saying: "*You can tell a Cooper Alloy Valve as far as you can see it!*" Write today for *your* copy of our folder "Design Factors In Stainless Steel Valves." The Cooper Alloy distributor near you will be glad to show you the complete line of Cooper Alloy valves *and fittings*, and their advantages. He can serve you promptly from local stocks.

COOPER ALLOY

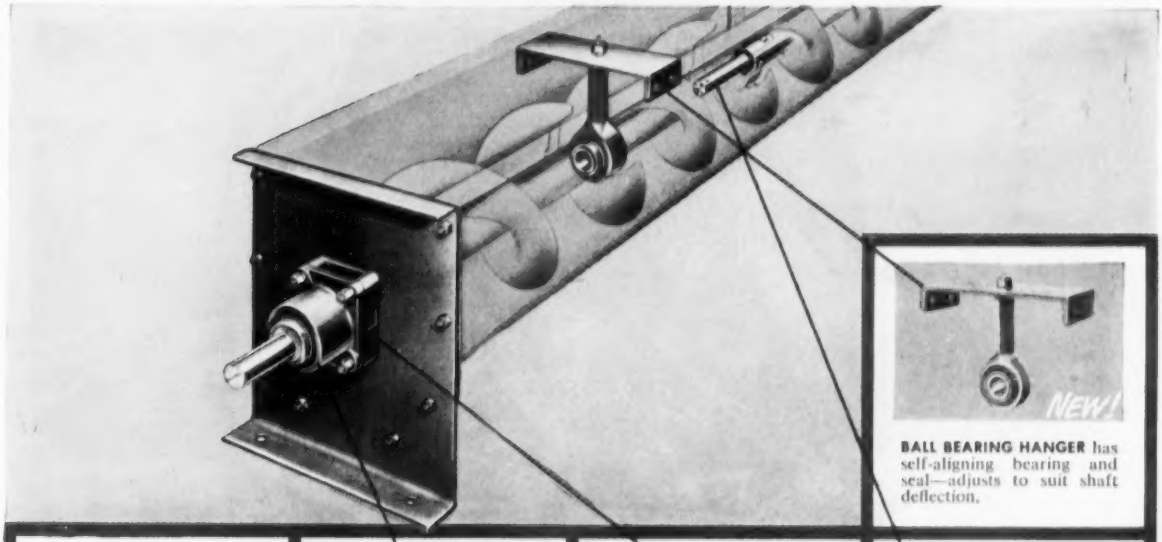
Corporation • Hillside, New Jersey

VALVE & FITTING DIVISION

THIRTY-FIVE YEARS OF STAINLESS STEEL PIONEERING

Why screw conveyors with

NEW LINK-BELT components demand less hp, less upkeep



BALL BEARING HANGER has self-aligning bearing and seal—adjusts to suit shaft deflection.

BALL AND ROLLER BEARING COUNTERSHAFT END connects two conveyors at right angles . . . permits use of a right-angle drive.

DOUBLE BALL BEARING TROUGH END supports shaft at two points. Resists overhung loads at drive end and takes thrust loads of screw.

SPACER BLOCK keeps grease in, dirt out. Used with lip, felt or waste packing seal to prevent bearing-product contact.

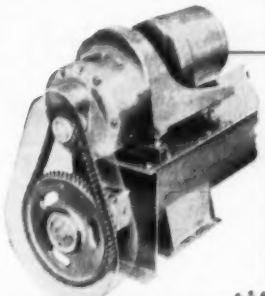
QUIK-LINK CONVEYOR SCREW. For ease in removal of conveyor section without disturbing other components.

For new or existing systems . . . LINK-BELT offers a complete line of accessories — many featuring ball and roller bearings

HERE's a complete line of screw conveyor components designed to bring you smoother performance — reduce downtime and maintenance. Countershaft ends, as well as new trough ends and hangers, use Link-Belt precision ball and roller bearings to reduce starting and running friction . . . lower power requirements.

The new trough end spacer block with seals protects bearings — prevents product contamination by grease and other foreign matter. Spacer is rabbetted for perfect alignment with bearings. Other refinements include Link-Belt Motogear drives for mounting on top of conveyor . . . and the Quik-Link conveyor screw that makes removal of conveyor section possible without disturbing other components.

For facts, call your nearby Link-Belt office or authorized stock-carrying distributor. Or write for Folder 2489.



COMPLETE MOTOGEAR power unit permits direct mounting on top of conveyor. In sizes up to 20 hp.

LINK-BELT

SCREW CONVEYORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,358

For more data, circle this page number on card at back →

...doing a sweet job for Maui pineapples

At the Maui Pineapple Company sugar ionization plant in Hawaii, they had a big problem in piping to lick before they upped their output to 60 or more gallons of purified syrup per hour.

First, they needed piping that would not be attacked by chemicals. Next, the piping must not contaminate, discolor or impart any kind of a taste to the pineapple juice.

Uscolite plastic pipe, fittings and valves were installed throughout the plant, and proved to be exactly what Maui Pineapple Co. wanted. Uscolite resists chemicals, has no effect on food or food processing materials. And in the warm humid climate of Hawaii, cold Uscolite pipe lines have far less tendency to sweat than metal pipe.

Uscolite has been adopted by over 500 leading chemical processors. For replacement or completely new piping, contact any of the 28 "U. S." District Sales offices or write us at Rockefeller Center, New York 20, N. Y. You are assured of immediate delivery of standard sizes and threaded fittings, including Uscolite (Hills-McCanna) valves.

US RUBBER

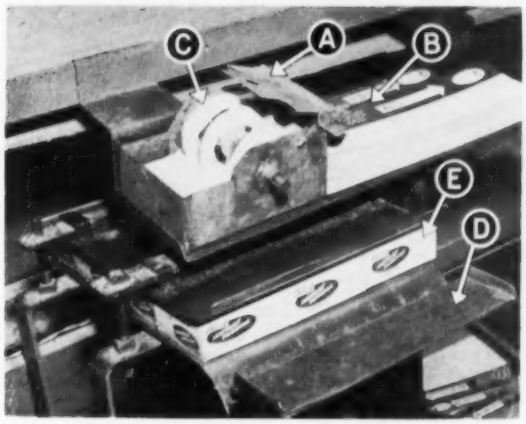
Mechanical Goods Division

United States Rubber

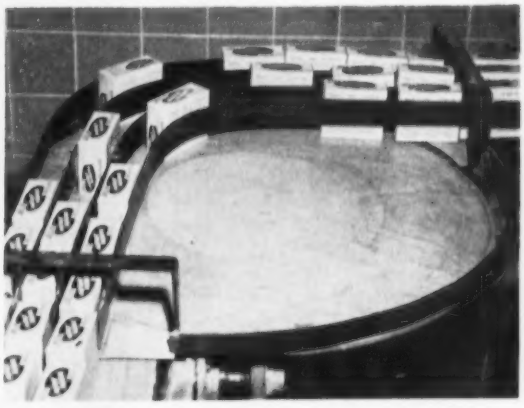
← For more data, circle this page number on card at back

TEAR OUT AND FILE

PRACTICAL IDEAS



SPRING-LOADED GUIDE PLATE (A) exerts pressure on half-sleeves (B) as they are carried over glue rolls (C). Then sleeves are placed on shelf (D) and get pushed into press (E) with cartons.



PLYWOOD TURNTABLE carries cartons around right-angle turn from case conveyor to assembly belt.

Engineering a Special Packaging Deal

To introduce a new instant pudding our marketing department wanted a pack consisting of two regular units, plus one package of the new flavor, assembled end-to-end and glued into a light cardboard sleeve (covering the face, one side, and one end of each 3-package unit).

Our entire production capacity of three Thayer packing machines was needed to supply the requirements of this special offer.

Main problem for the engineers was devising a press that would permit the sleeves to be folded around the cartons and held there long enough for glue to dry. This had to be done at a rate fast enough to handle the output of the units, and with a minimum number of extra people.

The solution was to mount two plates of 16-gage mild steel one above the other spaced at about the thickness of a filled carton. The bottom plate was attached rigidly to the main frame. But the top plate was removable, adjustable, and slightly flexible, and was separated from the cross frame members by blocks of sponge rubber. Four inverted U-clips kept the rubber in place and prevented the top plate from wandering. Leading edge of bottom plate was flared downwards, and a ½-in. lip formed a seat for the half-sleeve. The top plate was flared upwards.

Mounted on the frame, in front of the press, was a shelf for positioning the three cartons prior to being pushed forward against the half-sleeve and into the press. Four units were held in the press and, since it was open at both ends, a fifth unit entering at the top ejected one at the bottom.

For the glue applicators we used box-like pots having three fiber glue rolls about $\frac{5}{16}$-in. thick and $2\frac{3}{4}$-in. in dia. spaced so that they deposited a thin line of glue in the center of each panel along the entire length of the sleeve. Rolls were keyed to an axle running in bearings mounted outside of the pot.

Since we needed 13 assembly stations to handle the output of our three Thayers we erected a 30-ft. conveyor at right angles to the case conveyor. Thus cartons could be brought off the line to the assembly position, and the finished units could be returned to a packing station beside the case conveyor. This we did by feeding the cartons directly from the discharge of the pack-

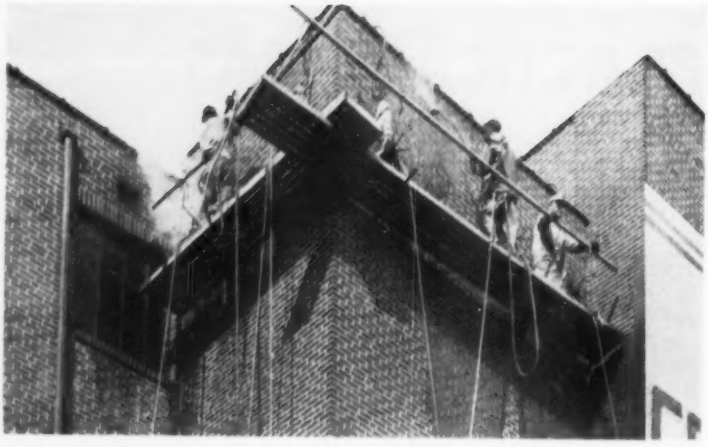
WITH 17 GIRLS ON ASSEMBLY, plus six on packaging units, and a service man, the line averaged 4,200 cases per day for two 8-hr. shifts.

ing machines to the case conveyor, through guides that kept each line of cartons in its own position.

As cartons approached the transfer point, they moved into three channels that fed them over a powered plywood turntable that drove them off the conveyor, turned them at right angles, and fed them to the top belt of the assembly conveyor. An operator controlled the flow of cartons at the transfer point and fed back any overflow in order to maintain adequate supply to the assembly operators.

To make up a unit we fed a half-sleeve through the guideplate of the glue pot and over the rolls, then dropped it in front of the press. Three cartons in the proper combination were picked up from the top conveyor, positioned in front of the half-sleeve, and pushed into the press, thus molding the sleeve around the cartons in one motion.

At the discharge end of the press a fast return conveyor carried the units back to the case packing position. Here, units were inspected, packed in cases, and placed on a conveyor to the sealer.—*Technical Bulletin, General Foods Corp.*



Cleaning Outside Walls

Steam cleaners are used by many food plants on equipment, floors, and interior walls, but V. Arena & Sons, Inc., Norristown, Pa. (makers of macaroni products) used them on the exterior of their office and plant (see photo) and then pointed the bricks to give a new look to the buildings.

They found that the same units (made by Turbo Machine Co., Lansdale, Pa.) used inside the plant could be used on buildings up to 10 stories high when the volume of steam pressure was adequate.

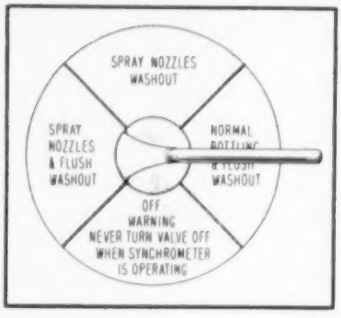
High pressure steam was applied to the building surface by a long gun applicator equipped with a flat nozzle. Steam alone can be used, or a detergent can be metered into the steam line by the machine.

Two Turbo oil-fired steam cleaners capable of rapidly converting cold water to steam at 120 psi. cleaned 3,300 sq. ft. of wall surface per day. —*FE Staff*

In-Plant Riding Saves Time

A solution to the problem of transporting visitors and executives to remote plant locations is offered by trailers with bus-type seating arrangements.

Shock absorbing casters assure comfort for riders, and the vehicle can be towed behind gas or electric tractors. One design, with seating for 6 or 9 passengers, utilizes a 10-gage safety steel plate platform that is 40-in. wide, 102-in. long, and 15-in. high.



Valve Opening Indicator

Multi-way valves can be annoying and cause trouble when you don't know which end is open.

One way to end the confusion is to install an indicator made of sheet metal. We have one on our carbonator (see sketch).

This one tells at a glance the flow direction at each of four settings.—*Floyd Rockei, Plant Engineer, Kirsch Beverage Co., Brooklyn, N. Y.*

CAN YOU USE $50?

Then here's an opportunity to get it.

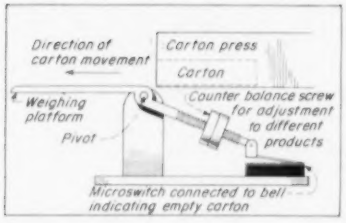
Send one of your ideas to FOOD ENGINEERING. Each month $50 is presented to someone like you for the best item in this department. And the chance that it will be you is now running about one in ten.

Also $5 to $15 (sometimes even more) is paid for each contributed items used. So a few minutes time may net you as high as $65.

Just send us the facts about your idea and its application. And include a free-hand sketch or snapshot to illustrate it.

We'll do the finished writing and drawing for you. Send it today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.

APRIL PRACTICAL IDEA WINNER was "Slack-Fill Nomograph," submitted by Paul F. Russell, Supervisor, Quality Control Department, Post Cereals Div., General Foods Corp., Battle Creek, Mich. (Winners are chosen by Readex, a foremost outside survey agency that regularly polls many scores of FE readers throughout the country.)



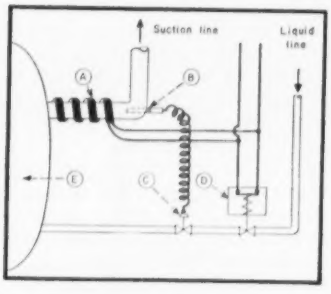
Slack Fill Detector

Since the weight of each carton delivered from our carton sealer is quite light, it is difficult to tell by feel when a carton is under weight. We installed a slack fill detector which functions perfectly.

The assembly was constructed in this manner:

A small carton weighing platform pivoted and counterbalanced (see sketch) was installed at the exit of the sealer. Counterbalanced side of the pivoted device is attached to the arm of a Microswitch which, when actuated, sounds a warning bell. The counterbalance arm is threaded for weights which are adjustable, thus providing the means of checking the weight of different sizes of packages.

The apparatus is quite sensitive. So long as filled cartons pass across the weighing platform, the Micro is held inoperative.—*Henry E. Metz, Supt. Baxter Laboratories, Inc., Morton Grove, Ill.*



Improved Refrigeration Of Outside Cold-Storage

Insulated tanks, such as used to store raw milk, are often installed with the refrigerant piping and controls out-of-doors, where the temperature may be more than 40 deg. below that of the refrigerant.

Under these conditions, and with intermittent use of the tank as a result of delivery schedules, the power element bulb of the thermostatic expansion valve will be cooled so low that the valve will starve the coil of gas.

But by wrapping a heating element (A)—of the type used to keep water pipes from freezing—around the suction line and power element bulb (B) the outside air has no effect on operation of valve (C).

Heater is connected in parallel with electric power source of solenoid valve (D) so that, whenever coil (E) becomes flooded with refrigerant (as it should be), the small output of the heater is overcome and operation is normal.—*La Verne Greene, Owner, Greene's Refrigeration Service, Rapid City, S.D.*

Gravity Loading of Stuffers Hikes Safety and Efficiency

When sausage stuffers are loaded with D-handled shovels it is hard work, and our crew used to suffer many hernias at this job.

But not since we started using gravity to accomplish this irksome chore. Fortunately for us, our sausage meat was located immediately over the stuffers, on the floor above. This made it possible to run stainless chutes right down into the stuffers.

We have four sausage units fed in this manner. Ground meat is loaded into special dumping carts (top photo) that can be tilted hydraulically. Each is equipped with a removable end for dumping.

When the stuffer operator on the

MERCOID
PRESSURE
CONTROLS

FM
Approved

Series DAW
FOR FLUIDS OR GASES
Bourdon Tube Operated
Hermetically Sealed Contact
Outside Adjustments
Visible Calibrated Dial
Visible "on-off" Operation
Operating ranges from 0-14 psig to 0-300 psig with differentials varying from 2 oz. to 14#. Listed as standard by UL (NEMA 1A,2,3,4.)
Write for Bulletin No. 6

Series PQ
FOR AIR OR GAS
Very sensitive.—Diaphragm Operated Available in six operating ranges from 0 to 0.1" pressure to 1 to 30" vac., with varying differentials. Has hermetically sealed contact.
Write for Bulletin No. 13

THE MERCOID CORPORATION
4211 Belmont Ave., Chicago 41, Ill.

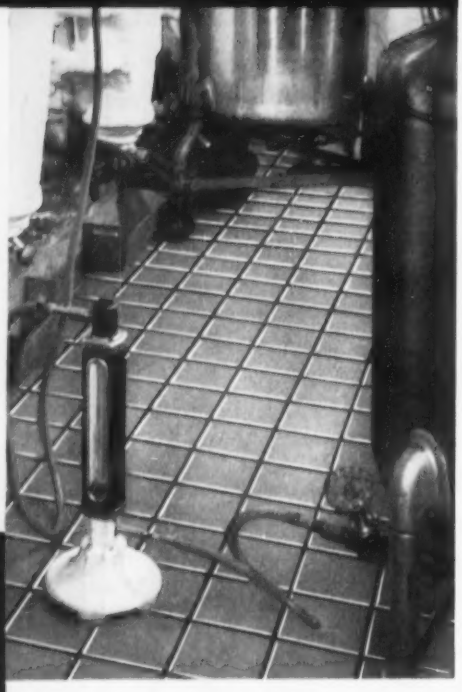
For more data, circle this page number on card at back →

A quiet revolution in flooring... the ATLAS FURNANE®

food plant floors!

"Individually Engineered" for permanent protection and beauty

Strict sanitation requirements, harsh cleaning solutions, heavy equipment, and corrosive food ingredients make floor maintenance one of the largest single problems in the food processing industry. Atlas, aware of these needs, has developed a revolutionary new concept of permanent floor protection, "Individually Engineered" Furnane Floors.



This patented method of floor construction, based on sound engineering principles and the proper use of expansion joints, combines the tested techniques of installation with a brand new tile size—6" x 6" x 1⅜"—pioneered by Atlas. Furnane Floors previously were available using only 6" x 6" x ¾" and 4" x 8" x 1⅜" tile; now use of the new tile size incorporates additional advantages into this floor construction.

AN ATLAS FURNANE FLOOR OFFERS THESE ADVANTAGES:

the ability to withstand greater physical abuse and thermal shock while providing the complete corrosion protection required by different food processing operations and varying plant conditions. They also present the attractiveness and beauty of the traditional 6" x 6" pattern. Atlas "Individually Engineered" food plant floors are custom designed to meet your specific needs.

ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

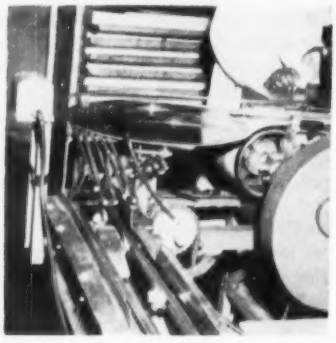
Write today for the booklet, Food Floor Facts, giving complete information. Consult the Yellow Pages for your local representatives.

Practical Ideas

lower floor wants a unit loaded he switches on a light that shows up on an upstairs panelboard. The light indicates which stuffer is to be loaded. A bell is hooked up to ring at the same time to call attention to the panel.

At the signal the operator dumps a load of ground meat into a stainless tube that is a vertical extension of the top of the sausage stuffer. The lower section is removable (photo above) to permit opening and closing of the stuffer.

This method of loading is highly efficient and has cut down on accidents.—*Gottlieb Loeffler, Mechanical Superintendent, Stahl-Meyer, Inc., New York City.*



Unit Unjams Packaging Line

Getting packages around a right-angle turn that exists between two belts was a problem on one of our frozen foods packaging lines.

Formerly this was carried out by a sheet metal trough, but that proved to be a bottleneck. The remedy was to install a turntable.

Now, we have no pile-ups at the corner and a guard-rail adjustment screw (see above photo) permits us to accommodate the turntable to any size package. The adjustment is made on a threaded rod brazed to the inner rail. The rod goes through a hole in a member bolted to the conveyor frame and two nuts hold it in position. Other end of the rod is hinged. —*Webster McAllen, Plant Superintendent, Phillips Packing Co., Cambridge, Md.*

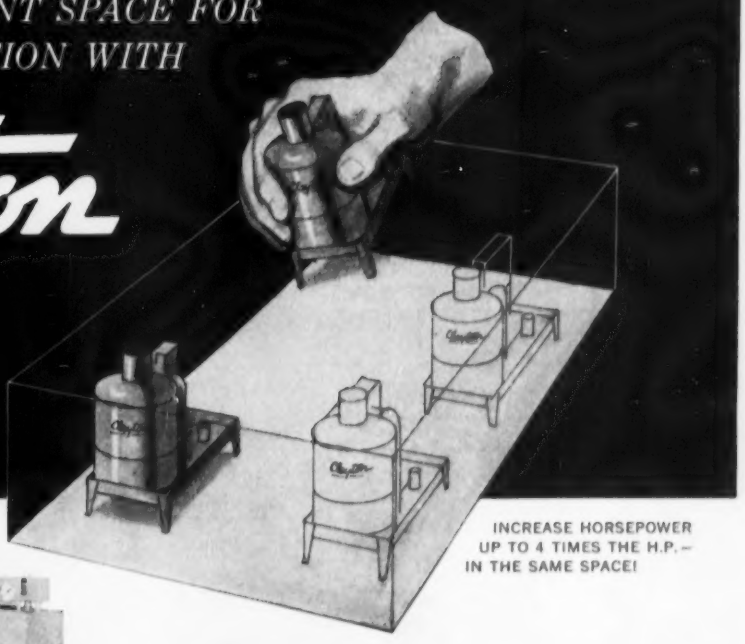
Quick-Built Concrete Tanks

Urgently needed tanks last year provided emergency capacity for an unusually large wine crop that

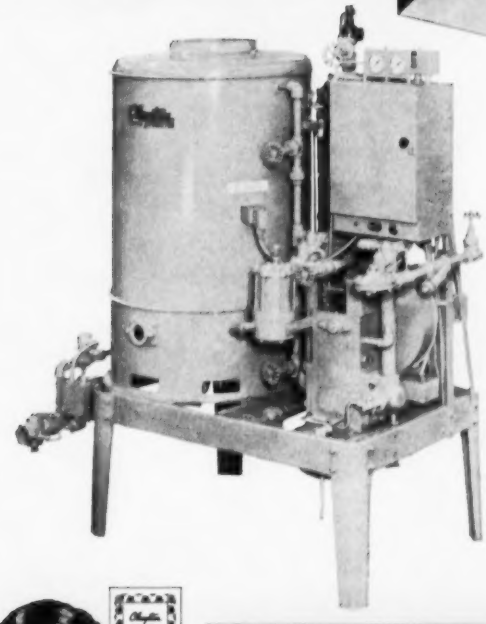
CRAMPED FOR SPACE?

RELEASE PRESENT SPACE FOR ADDED PRODUCTION WITH

Clayton STEAM GENERATORS



INCREASE HORSEPOWER UP TO 4 TIMES THE H.P.— IN THE SAME SPACE!



CUT COSTS – BOOST PROFITS!

Why waste valuable production space on big boiler room installations? Clayton Steam Generators take up only ¼ the space of ordinary boilers of equivalent horsepower. Place 'em at or near the spot where steam is *used*—*avoid* long, heat-wasting and costly piping and conduit—*avoid cost of* maintaining conduit, special floor construction, tall smoke stacks—*avoid* smoke abatement problems! *Save up to 50%* on fuel—save even more on production shutdowns; when you use two or more Claytons, one serves as a standby steam source for the other!

CAN BE LOCATED AND MOVED AS DESIRED— INSTALL ON ROOF—ON ANY FLOOR—IN BASEMENT—Clayton Steam Generators are so light and compact, you can put 'em in closets, in corners, in "waste" space! From roof to basement, wherever you have as much as 15 to 28 square feet of floor, you can install a Clayton unit, 15 to100 H.P. according to need. No costly new construction, no ripping out walls, no shoring up floors! Your new Clayton Steam Generator can be on the job, making profitable production for you in days instead of weeks!

Exclusive! ONLY CLAYTON GIVES THIS 5-YEAR PUBLISHED WARRANTY

Of every 100 Clayton generators produced (in the last 26 years), 97 are still serving users profitably and efficiently. Compare Clayton's 5-year published warranty on material and labor.

For Full Information—MAIL COUPON NOW!

CLAYTON MANUFACTURING CO., Box 550, El Monte, Calif. F-7

Gentlemen: Please send complete information on how Clayton Steam Generators can increase our profits.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

We use steam for_____

Clayton MANUFACTURING COMPANY

El Monte, California • Cincinnati, Ohio

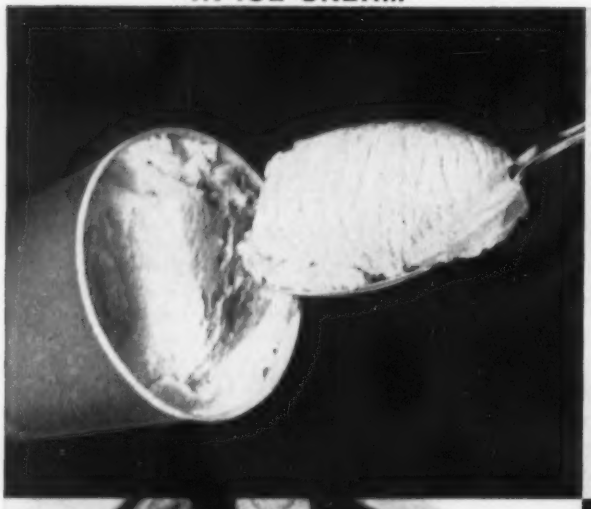
For more data, circle this page number on card at back →

Tailored to meet exacting food specifications...

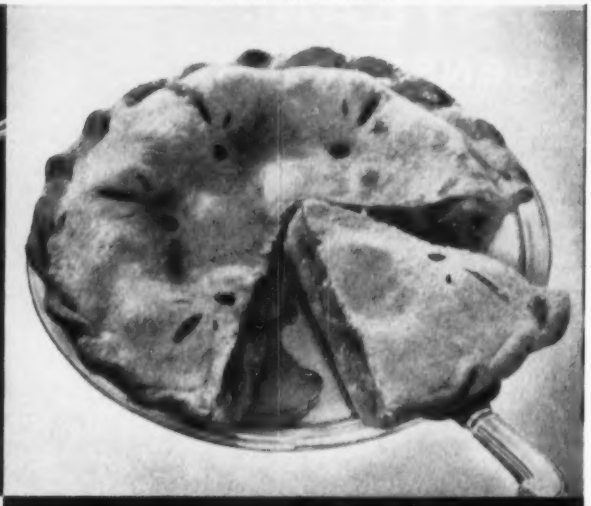
REX® corn syrup—high in total sugar content —lowest viscosity of any corn syrup—easy to handle

GLOBE® corn syrups—medium and regular conversion—available in a range of viscosities

Promote smooth, uniform texture, true flavor
IN ICE CREAM



Preserve natural color and flavor of fruit
IN FRUIT PIES



IN CONFECTIONERY
Assure better grain control, longer shelf life

IN CANNING
Preserve true color, enhance natural fruit flavor

Technical assistance in developing improved formulations available on request.

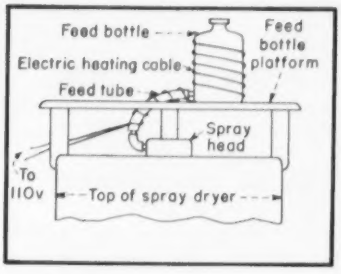
CORN PRODUCTS SALES COMPANY
17 Battery Place, New York 4, N. Y.

threatened to overflow Portugal's existing wine facilities.

Hemispheres, each holding 73,600 gal., were constructed by the following three steps: (1) Inflating a Neoprene-Nylon balloon over a foundation ring; (2) covering it with reinforcing wire; (3) spraying on a 2-in. thickness of concrete.

When the shell hardened, the balloon was deflated and reused. And, though a conventional tank takes a month to build, 50 of these units were made in 90 days.

So pleased were the Portugese that 5,000 more tanks were contracted for.—*"Elastomers Notebook," publication of E. I. du Pont de Nemours & Co., Wilmington, Del.*



Increasing Viscous Flow

Getting high viscosity mixtures to flow through narrow tubes (such as found running from the supply bottle to the spray head of laboratory spray driers) is often simply a matter of wrapping the supply vessel and tube with an electric heating cable (see sketch).—*FE Staff*

Line Overflow Held in Trucks

We are well pleased with the design of trucks used in our processing. They are mainly used as temporary

Merchen Scale Feeders blending salt and trace minerals at Carey Salt Co., Hutchinson, Kansas.

MERCHEN SCALE FEEDERS

offer continuous dry blending by weight

The Carey Salt Company produces salt blocks for cattle that contain a percent blend by weight of nutritional minerals. W&T Merchen Scale Feeders were selected for the blending operation.

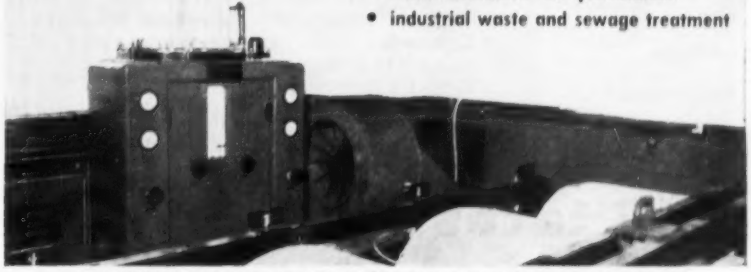
If accurate blending of dry, free flowing materials is important to your production, Merchen Scale Feeders offer feed rates from 3 ounces to 3000 pounds per minute, always maintaining accuracy within 1% of the feed rate. The feeders compensate for changes in material density to maintain a constant feed by weight.

Where a number of ingredients must be blended, Merchen Feeders can be electrically or pneumatically controlled from other plant equipment for automatic operation. Send for our free booklet M-33, "The Best Weigh is the Merchen Way."

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

CHLORINATORS and CHEMICAL FEEDERS

for
- slime elimination
- water treatment and purification
- industrial waste and sewage treatment



WALLACE & TIERNAN INCORPORATED
CD-41 25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

For more data, circle this page number on card at back →

TEFLON*..."slickest thing for sticky job"

SAYS ALGER CANDY CO., SALEM, MASS.

cementable TEFLON...

Slipperiest material provides non-stick, sanitary surfaces for...

- Hoppers
- Chutes
- Conveyor guides
- Packaging machine guides
- Filling machines
- Work tables
- Baking pans
- Pastry flats
- Mixers
- Feeders
- Bins, etc.

*du Pont trademark

...lining the frames used in forming candy bars, solved a serious production problem for this New England Candy Manufacturer.

G. R. GUENETTE, their president states:

"Here—the really sticky mass of warm candy that will adhere to everything it touches—positively refuses to stick to Teflon. Frames release from the sticky fruit candy at slightest pressure. Teflon needs no coating of oil, slab-dressing or any type of releasing agent. Pure, clean, chemically inert, tasteless, odorless, non-contaminating—it is truly a miracle substance which has increased production and lowered costs in our plant."

Cementable Teflon has many applications in food plants of all types, where its unusual characteristics offer advantages no other material can provide. (See partial list at left)

Made in inexpensive tape in continuous rolls and in sheets up to 48" x 48" in size.

Readily cemented with commercial adhesives to any metal, wood, concrete, plastic, glass or other surface of new or existing equipment.

Write for Bulletin AD-158.

United States Gasket Company
Camden 1, New Jersey

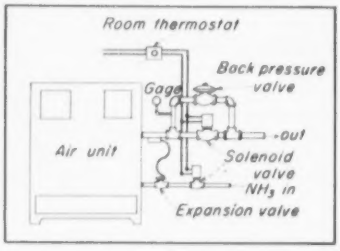
United States Gasket *Plastics Division*
OF THE GARLOCK PACKING COMPANY

Practical Ideas

storage whenever our supply of produce outstrips production, or when there is a temporary stoppage in the line. Then product can be fed into the portable containers.

When we want to process vegetables stored in the trucks we simply open the door (see photo above) and let the contents spill out onto a belt.

Maneuverability of the vehicle is enhanced by two swivel-top casters. —*H. W. Tilghman, Plant Manager, Shoreland Freezers, Inc., Salisbury, Md.*



Controls Frigid Air Unit

We found a simple way to control temperature and humidity in an air-conditioned processing department where workers often were uncomfortable because of high humidity.

The department is cooled by an air unit connected to a central ammonia refrigeration plant normally operating at 25 psi. suction.

Two thermostat-controlled solenoid valves (see sketch) were installed on the unit—one in the suction pipe, and another in the liquid feed pipe. And a back pressure valve was placed to by-pass the suction solenoid. It was adjusted to maintain a refrigerant temperature below the dew point of the conditioned air.

In operation, the thermostat opens or closes the solenoids to maintain the temperature, and the back pressure valve keeps the coil temperature below the dew point during the off cycle. When the back pressure valve is properly adjusted the unit will hold steady temperature and humidity, even at fluctuating loads. —*G. M. Norton, Refrigeration Superintendent, Producers Produce Co., Springfield, Mo.*

Handy Spray for Solvents: A fine spray for cleaning paint or grease from tools and hands in a hurry is afforded by empty window spray bottles when refilled with turpentine or kerosene.

← For more data, circle this page number on card at back

Long-term costs are lower with corkboard insulation

For cold room construction where a low-cost, long-term investment is more important than a low initial cost, the insulation to use is Armstrong Corkboard. No other insulation can match corkboard's record for long, trouble-free service. Properly installed, it will perform efficiently for as long as 40 years.

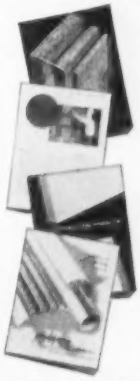
Cork's closed cellular composition seals out moisture, keeps its high resistance to heat flow indefinitely. Cold room temperatures can be held year after year without soaring refrigeration and insulation maintenance costs.

Armstrong Corkboard is one of the many fine products in the complete line of Armstrong Insulations. Armstrong also offers a contracting service to install these products economically and efficiently.

Armstrong INSULATIONS

for temperatures from −300° F. to +2800° F.

Free Booklets



Armstrong Corkboard for Low-Temperature Rooms

Armstrong Armaglas* Insulations for Low-Temperature Rooms

Armstrong Armalite**, a New Foamed Plastic Insulation

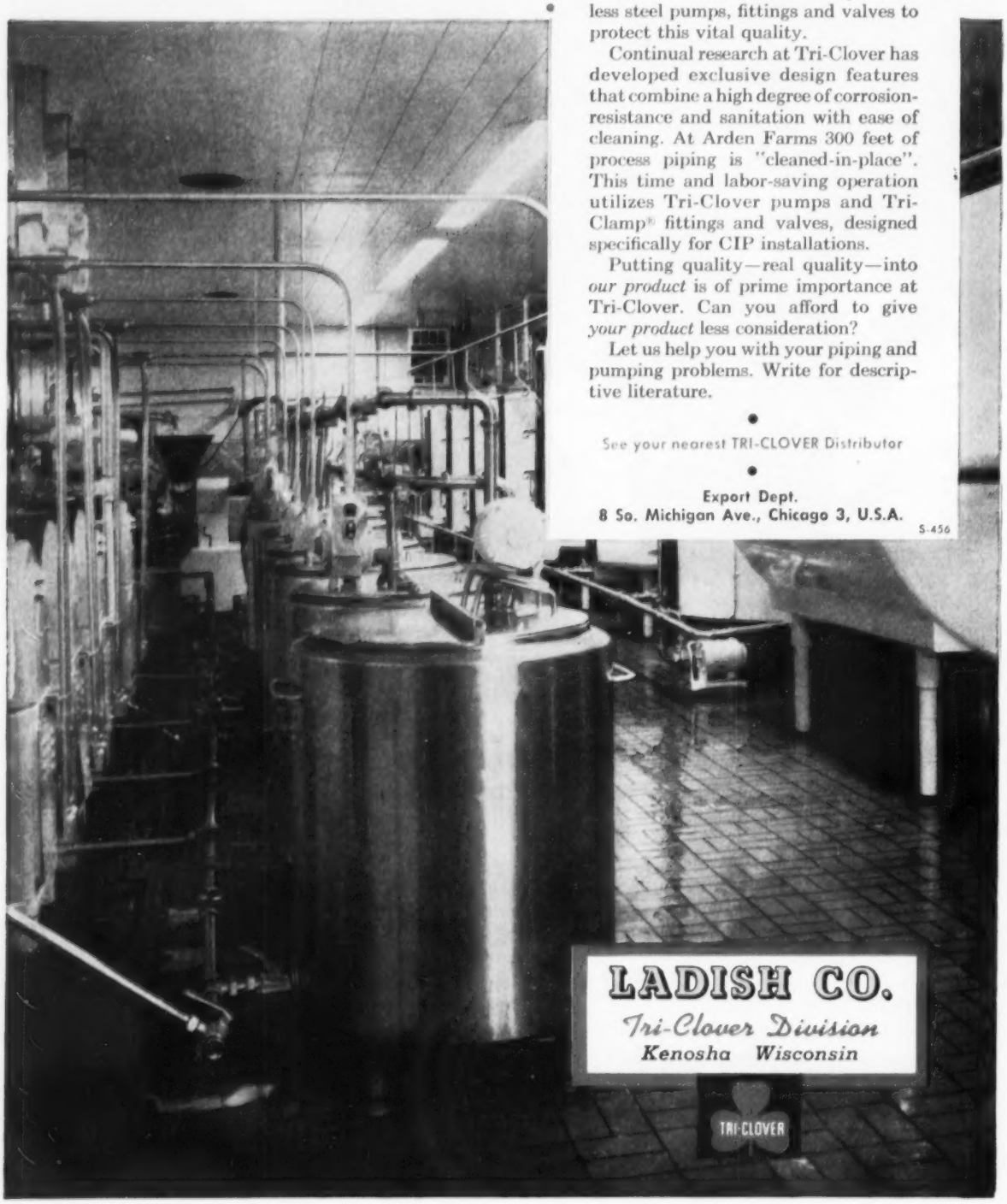
Armstrong LT Cork Covering for All Cold Lines

For full information write to Armstrong Cork Company, 2307 Seventh Street, Lancaster, Pa.

*T. M. ARMSTRONG CORK COMPANY, MANUFACTURED BY OWENS-CORNING FIBERGLAS CORP. **TRADE-MARK

There is no substitute for QUALITY

Ice Cream producers protect product quality with* TRI-CLOVER *Pumps and Fittings



The constant high quality of ice cream products results in continued customer satisfaction and repeat order business. Arden Farms Co. of San Leandro, California, is one of many modern ice cream plants employing Tri-Clover Division's sanitary stainless steel pumps, fittings and valves to protect this vital quality.

Continual research at Tri-Clover has developed exclusive design features that combine a high degree of corrosion-resistance and sanitation with ease of cleaning. At Arden Farms 300 feet of process piping is "cleaned-in-place". This time and labor-saving operation utilizes Tri-Clover pumps and Tri-Clamp® fittings and valves, designed specifically for CIP installations.

Putting quality—real quality—into *our product* is of prime importance at Tri-Clover. Can you afford to give *your product* less consideration?

Let us help you with your piping and pumping problems. Write for descriptive literature.

•

See your nearest TRI-CLOVER Distributor

•

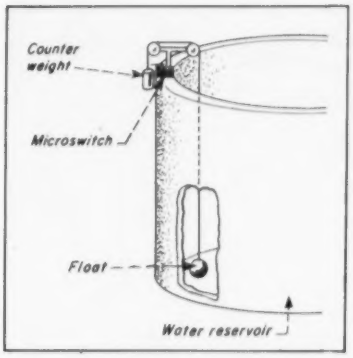
Export Dept.
8 So. Michigan Ave., Chicago 3, U.S.A.

S-456

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

TRI-CLOVER

← For more data, circle this page number on card at back

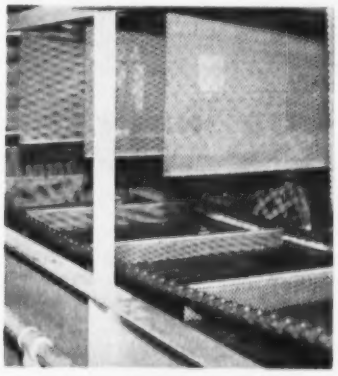


Warns When Tank Is Low

In our engine room, it's necessary that we know when the water supply in our large concrete reservoir is nearing the empty point.

To warn when the water level has dropped dangerously low, we installed a spring-leaf actuated Microswitch (see sketch), near the top of the tank. It is positioned so as to be operated by the float's counterweight when the float is nearing the bottom of the tank.

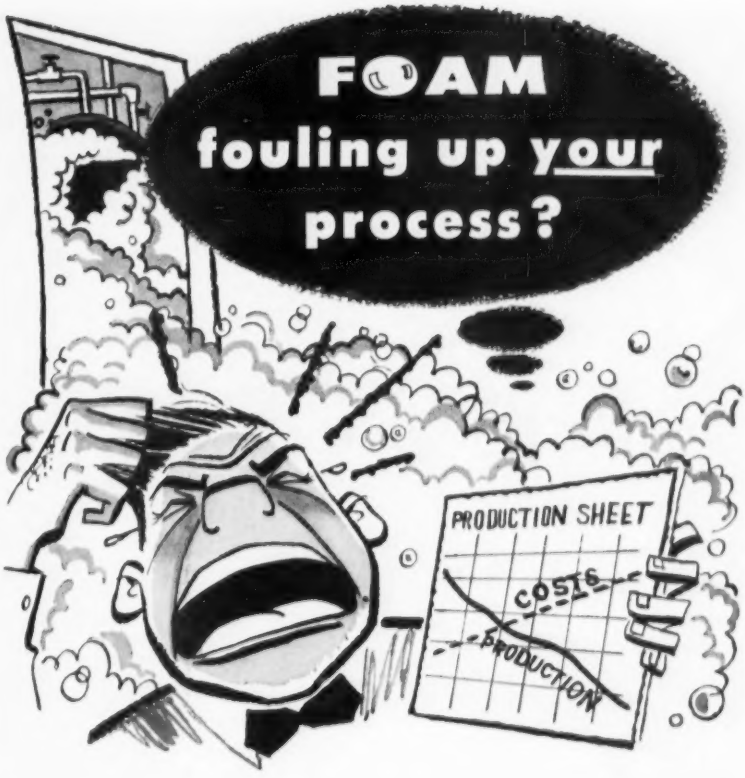
Closing of the circuit flashes a red light in the engine room in ample time to replenish the reservoir supply.—*G. F. Suchy, Chief Engineer, The Borden Co., Waukesha, Wis.*



Wire Curtains Move Product

Gentle movement of asparagus through a water cooler is accomplished by this unit (see photo).

Built by Cambridge Wire Cloth Co., it consists of a series of woven wire curtains strung on a pair of chains. One after another the curtains pass through the cooling tank gently nudging the asparagus spears along. Free-swinging hookup where screens hinge on cross rods between chains eliminates problem of crushed vegetables.—*FE Staff*



Get a Dow Corning Silicone Defoamer!

Now—solve your foaming problems immediately and at amazingly low cost with these Dow Corning silicone defoamers!

Antifoam A Compound—permissible to use in processing nonstandardized foods at concentrations up to 10 ppm.

Antifoam AF Emulsion (water dilutable)—permissible at concentrations up to 34 ppm.

A tiny amount can prevent mountains of foam . . . enabling you to utilize full productive capacity and put your processing into high gear. What's more, when you eliminate foam, you say goodbye to wasteful boil-overs and the fire hazards they may present.

. . . So, stop frothing about those FOAM problems—*eliminate* them with a Dow Corning silicone defoamer. They're the most versatile and efficient foam killers ever developed!

FREE SAMPLE and INFORMATION—
To receive a generous trial sample of a Dow Corning Silicone Defoamer, return coupon below or write on your letterhead. No obligation, of course.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

5519

NAME

TITLE

COMPANY

CITY ZONE STATE

My foamer is

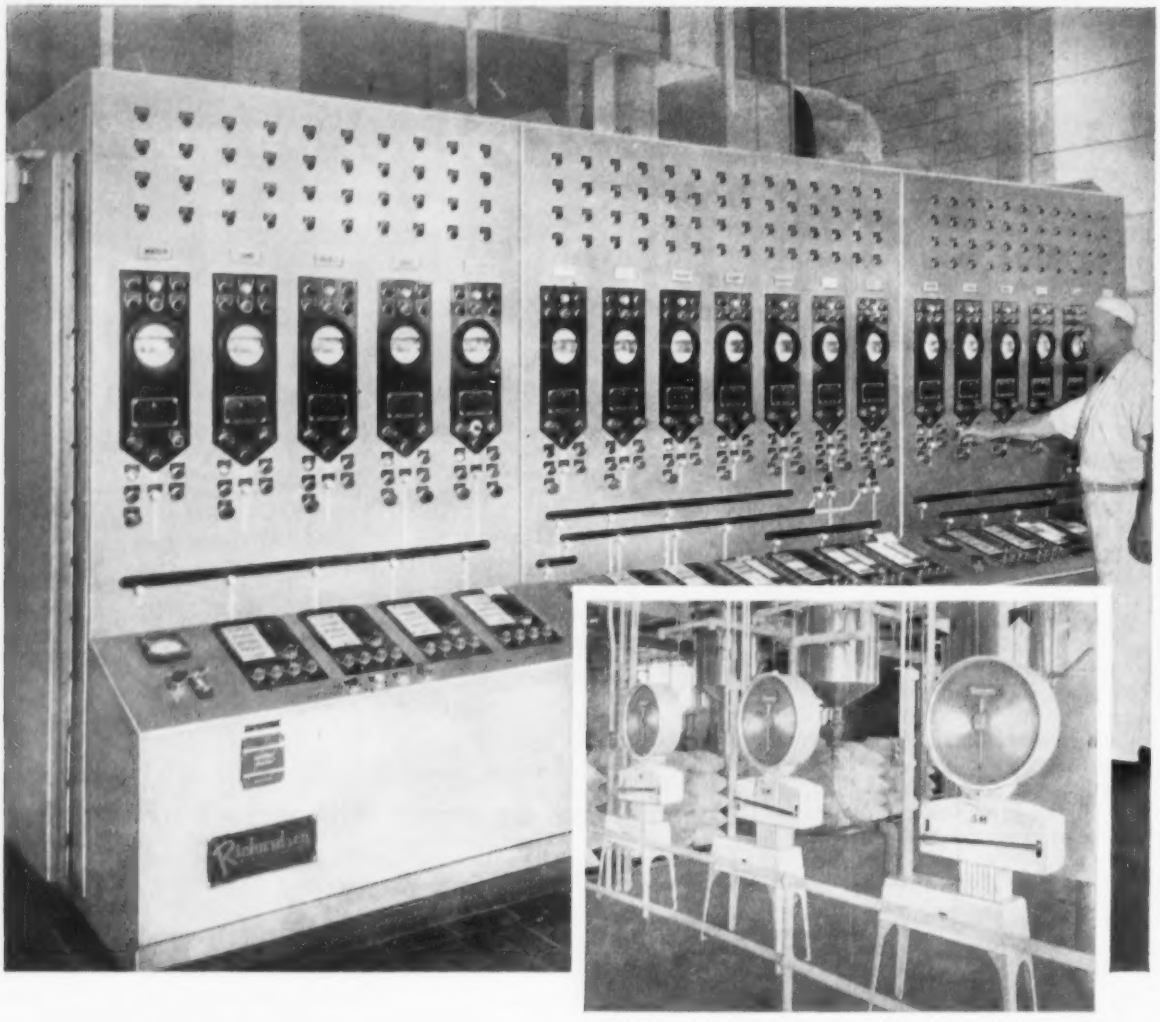
Oil system

Aqueous system

Food products

Other

For more data, circle this page number on card at back →



BIGGEST PROPORTIONING PANEL IN FOOD INDUSTRY

...And Adaptable to Any Industry Requiring Precise Formulation

This Richardson Select-O-Weigh system is the most complete automatic proportioning panel yet installed in the food industry.

Coupled with a conveying system, the panel controls automatic feeding of material from any of 14 flour bins, two sugar bins, and storage tanks for shortening, invert, molasses, and water. With this system, the bakery can proportion three different formulas simultaneously. Every phase of operation is clearly indicated on the panel by means of signal lights, which graphically reflect actual material flow. Ingredients can be delivered in the sequence and proportions called for by a specified formula. When each phase of this operation is completed, a signal light on the panel notifies the operator. When an ingredient is delivered to the mixer, a light beside the panel card on the board flashes. The operator knows at all times the progress of each formula being delivered to the mixers.

CONTROLS

The entire Richardson Select-O-Weigh system is interlocked with all elements it controls, so that any operation can be halted if necessary. At the beginning of each weighing cycle a "ready-start" light flashes, indicating the scale is at tare. At the conclusion of each weighing, an automatic weight check is made. Under or overweight is indicated on the control panel and scale discharge is automatically held up for correction.

For additional information on this interesting installation, and engineering assistance in automating your operation, write Richardson Scale Company, Clifton, New Jersey.

4974

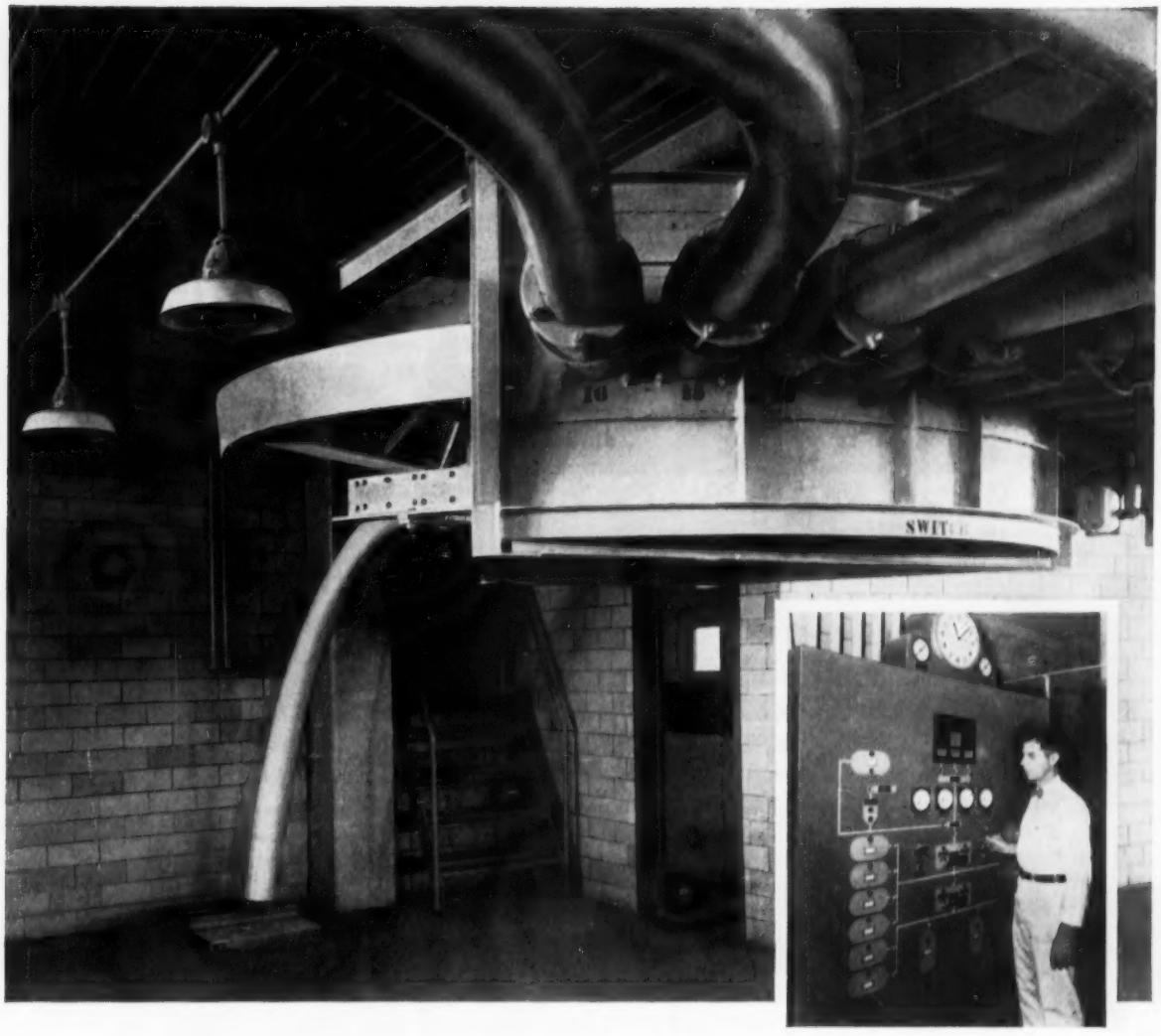
Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

RICHARDSON SCALE COMPANY, CLIFTON, NEW JERSEY

Atlanta • Boston • Buffalo • Chicago • Cincinnati • Houston • Memphis • Minneapolis
New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal
Toronto • Havana • Mexico City • San Juan • Geneva, Switzerland • Nottingham, England

← For more data, circle this page number on card at back



MILLIONS OF POUNDS—FROM AIRSLIDE® CARS TO MIXERS

. . . Conveyed Pneumatically

The most modern system for automatic unloading, storage, proportioning of ingredients, and transport to mixers in the food industry is saving time and money for a large eastern bakery.

The system is operated by two men who receive, store, proportion, and deliver to mixers 10 million lbs. of ingredients a month.

Fuller equipment for this operation includes: a vacuum type Airveyor® system with three bulk flour unloading stations, a pressure type Airveyor system for transferring flour to storage or sugar from storage to icing department, and two specially designed motorized pipe switches through which the various flours are diverted to selected bins. F-H Airslides and metering feeders are located at the bottom of the storage bins.

Not only has this pneumatic system resulted in substantial savings for the bakery, but it has also established sanitary conditions and conserved storage space.

For speed, convenience, and sanitation in *your* materials handling operations, call on Fuller. The proper combination of Airveyors, Airslides, and accessory equipment to meet your specific handling requirements will increase material flow, release workers for higher skills, modernize your production methods.

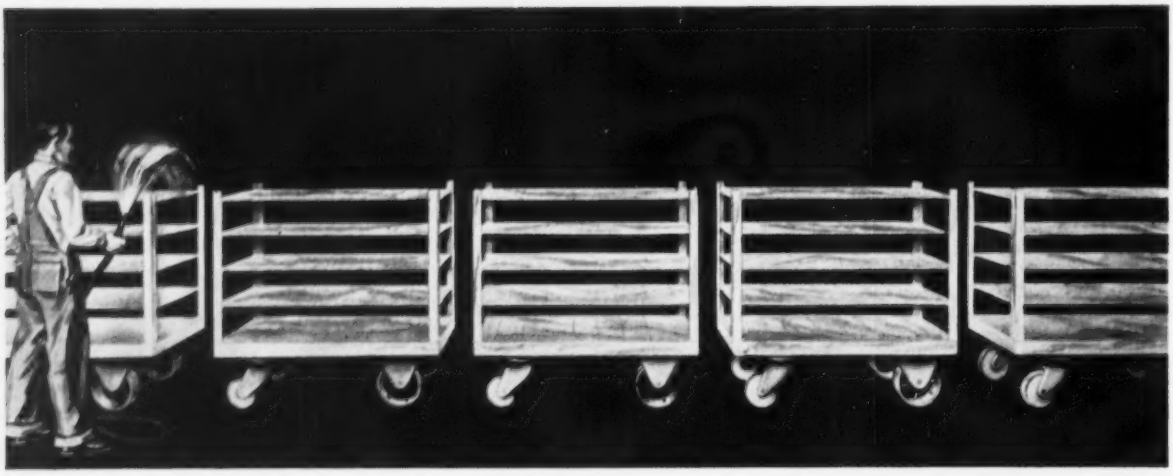
Write today for helpful information, and unbiased materials handling service.

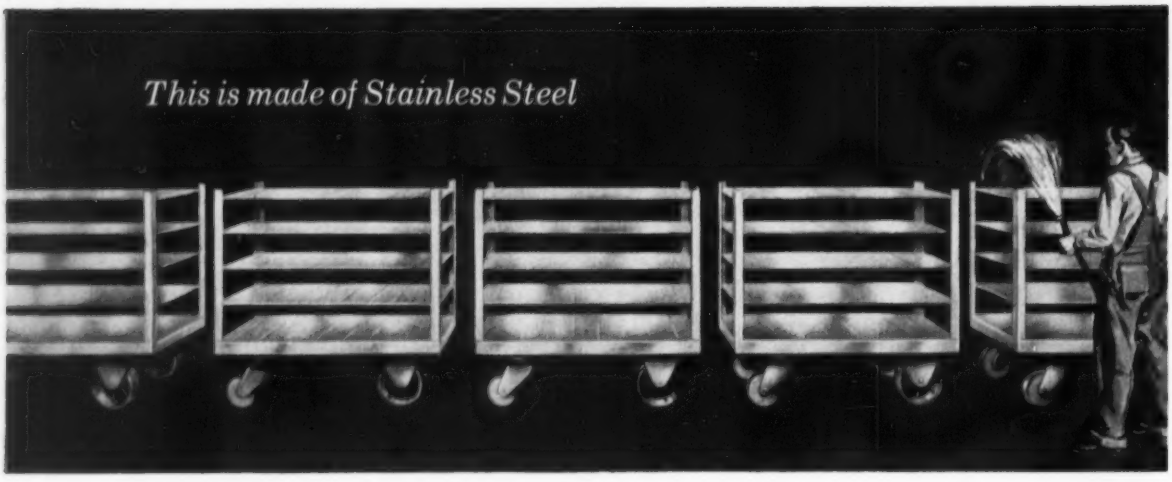
A-252
4279

FULLER COMPANY
114 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Birmingham • Chicago • Kansas City • Los Angeles • San Francisco • Seattle

Fuller
. . . . pioneers in harnessing AIR

For more data, circle this page number on card at back →





When you consider the speed of cleaning... Which trucks really cost more?

The speed at which meat must be packed today means there is literally no time for slow, difficult cleaning of equipment. There's no time for replacing worn, rusted, or corroded equipment either. It's by saving cleaning time—and virtually eliminating replacement costs—that Crucible stainless has made its impact on today's swiftly-moving meat packing industry.

Crucible stainless is not only the fastest metal to clean in the business—5 times faster than any other—it comes clean without developing rough spots that collect bacteria. It withstands even harsh cleaning chemicals that speed up the process but often attack other metals, and it's impervious to amino and fatty acids as well. No meat, no matter what corrosive acids it contains, can break down its smooth shiny surface.

In the long run, the more equipment you have made of Crucible stainless steel, the less you'll pay to pack meat.

Get the whole story. Either (1) write for free 24 page booklet, discussing the use of stainless steel in the meat packing industry, or (2) contact *Crucible Steel Company of America. The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

New Era Ahead in Nutrition—Meanwhile, Be Calm

We are approaching a new era in nutrition—one in which the constituents of foods will be considered as chemical raw materials for chemical processes in the human body.

We even may see extensive development of therapeutic diets—to be used by physicians to control or cure some killers like cancer. And why not? Nutrition is chemistry. So also are many serious ailments.

We now have only a small fraction of the knowledge needed of the complex role played by food constituents in our living, ailing, and aging processes.

Researchers Will Relate the Factors

But this situation is about to be improved. Researchers have come up with enough isolated half-truths to excite food manufacturers, nutritionists, technologists, and the medical profession. And research is being launched, not merely to study isolated nutritional effects, but to determine interrelationships.

Some recent investigations, such as those pointing an uncertain finger at fats, have had a stimulating effect—though they have been so over-emphasized as to pose the hazard of dangerous fad and fear diets. But even more valuable has been other, and less ballyhooed, research revealing a closer interdependence of basic nutritional factors than had been known. The findings have indicated, for example, that not only must the essential amino acids be reasonably balanced in the daily diet, but the carbohydrate intake has to be right for effective performance of the proteins. And, of course, fats, minerals, vitamins, and trace-elements must be included in the chemicals supplied to our two-legged reactor and synthesizer.

That a balanced diet is right, nutritionists are more certain than ever. Additional research will provide the information with which to more precisely proportion the balance. We'll know how much protein, with how much of what kinds of fat, should be consumed with what quantity of carbohydrates, vitamins, and minerals.

We'll know because we'll savvy the chemistry of nutrition quantitatively as well as qualitatively—in toto and not as isolated reactions.

Be Patient and Do Not Encourage Fads

This new era of nutritional knowledge will not be here tomorrow, nor next year. But we look to the future with confidence, because of the extent and intensity of research underway. For instance, food manufacturer members and friends of Nutrition Foundation have contributed about three quarters of a million dollars for special research on fats and related factors in the diet. Nutrition research is being stepped up, too, by many other groups.

Still more food firms would do well to support such research. Nothing is more important in the future of food manufacturing and processing than this contribution to better and longer living through better health. Nothing is better business insurance than keeping your kind of product from being starred by the fear dietitians.

And while you await the new knowledge of nutrition, keep calm. Don't let half-truths misdirect your food manufacturing practices. Above all, don't promote unbalanced fad or fear diets for the sake of short-time commercial gain.

Crane Valves Handle Corrosive Fluids Without Costly Leakage

Valve life more than doubled in this corrosive brine service

After more than 10 years' service on strong brine, these valves are still operating with high efficiency.

They are Crane No. 461 iron body gates, installed on a brine and condensate line at the world's largest sea water salt plant—located in Newark, Calif., and owned by Leslie Salt Co.

Before changing to the Crane valves, the plant was having difficulties with lubricated plug cocks. The plugs pitted; the cocks leaked continually, and had to be replaced within 5 years. Installing Crane iron gate valves put a stop to the problem, eliminating leakage and replacement costs.

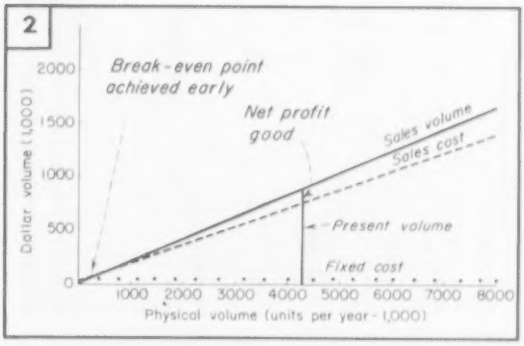
For more information on Crane iron body valves for many corrosive services, see your local Crane Representative, or write to Crane Co., address below.

GET YOUR COPY of "Valve Performance Facts"—32 illustrated case histories covering valve installations throughout industry.

CRANE VALVES & FITTINGS

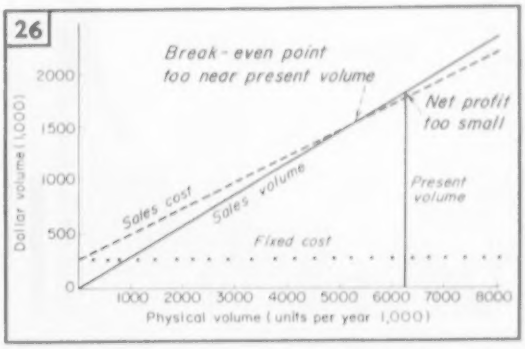
PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill., Branches and Wholesalers Serving All Areas



Good practice

Plant 2 has developed a good profit spread (between gross and break-even) through careful control over costs.



. . . versus . . . not so good

Plant 26, however, has a break-even point much too close to sales volume. It could use better management.

Is Your Plant Well Managed?

Likely, your impulse is to answer "Yes." But before you do, take a second look at your performance—in the cold light of these pertinent facts just revealed by a food-firm survey in New England. For you may find you have considerable potential for real cost savings—through *better* management

ONE THING IS SURE: You haven't got top managing performance unless you've properly balanced your efforts between administering and operating.

To put it more succinctly, you are courting real trouble if one of these phases gets an inordinate amount of your attention to the neglect of the other.

This was our finding when, recently, our University of Massachusetts researchers studied 31 of the state's food processing plants. Here, in the interests of comparability, we centered our attentions on a particular branch of the industry—the dairy field.

True enough, we found most of the managers of the plants examined had processing of their products well in hand. They kept a careful watch on loss or shrinkage of products

But in areas of the administration sphere—the making of decisions, long range planning, checks on investments, costs, efficiencies, and the like—their handling of matters left much to be desired.

In all of the plants studied, it became evident that there were inviting opportunities for cost savings, time savings, and improved labor utilization—through the means of better management.

It was clear that the plants that hadn't been through the process of what we call "methods improvement" and "time study" could realize a tremendous saving in the time and energy required of their present work forces—if their managements adopted these methods.

In our study, the following factors were measured in order to establish elements of contrast: (1) Equipment investment, (2) real estate investment, (3) labor efficiency, (4) depreciation of equipment, (5) indirect labor, (6) labor turnover, (7) machine efficiency, (8) over-all efficiency, (9) output in terms of unit cost in dollars, (10) productivity, and (11) break-even factors.

Results (see Fig. 1) were grouped according to plant sizes, the yardstick being processing levels: Small (940 qt./day average), medium (6,190 qt./day), large (51,770 qt./day).

1. **Equipment investment.** It became evident that there is very little relationship between total investment and total production (Fig. 2). One possible explanation is the types and ages of equipment employed.

Here, the picture varies widely—from firms that are still using units that are now completely outmoded to plants that have just installed late-model processing equipment. Of those lately modernized, some in fact, are actually over-equipped, and thus they are in need of additional

LAWRENCE C. HACKAMACK
Associate Professor, School of Industrial Administration, University of Massachusetts

Charts Present Detailed Story

Numbers atop bars are plant

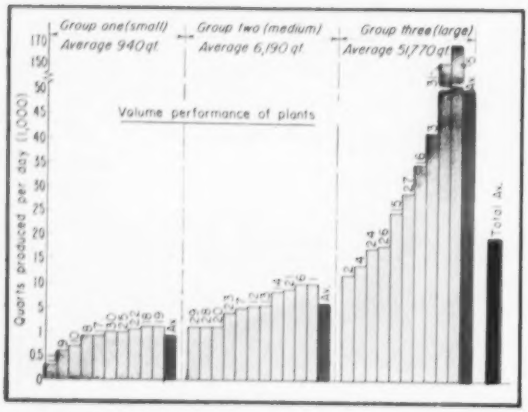


FIG. 1. PLANTS were divided into three groups according to their daily volume. Variations in size and types of containers were not taken into account in the study.

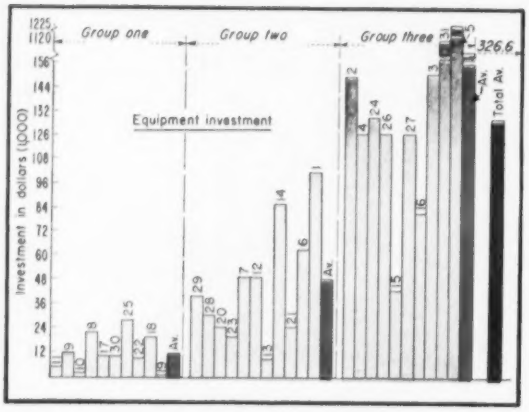


FIG. 2. INVESTMENT in equipment tended to move upward with volume. However, there was little relationship between this investment and quarts produced.

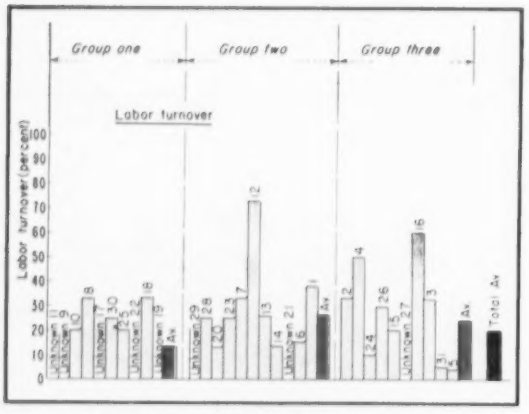


FIG. 5. LABOR TURNOVER in the 31 plants averaged 20%—more than five times the national average for all industries. This is a problem requiring careful investigation.

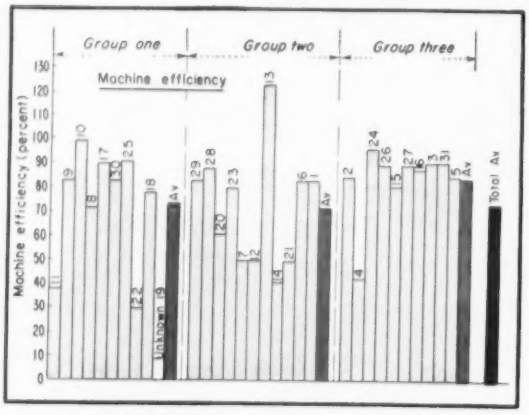


FIG. 6. EFFICIENCY of machines (average 74%) suggests that many firms lack adequate planning and utilization of equipment. Some were considerably over-equipped.

production to utilize their facilities to the best advantage.

It would, therefore, seem wise for many of the managers to reconsider their equipment investment and to analyze whether or not they are getting the best possible return per dollar invested.

2. Real estate investment indicated that perhaps there is now some understanding of its relation to productivity level. However, there was a great variation in the sample firms, due partly to age of the buildings (see Fig. 3).

A more complete analysis by managers concerning their investment dollar per unit is necessary to allow for proper planning.

3. Labor efficiency. Effective labor utilization was almost completely lacking in the major portion of the plants. Only when very large production was reached were the managers fully aware of labor utilization and time standards information.

Without use of this effective measurement, which is one of the first principles of good scientific management, it is not possible to determine whether or not a man is producing a good day's work for the pay given him.

4. Depreciation of equipment seems to be understood very well. Even so, there were variations among those reporting. For example, 20 firms used 10 yr. as life expectancy for all their equipment; 4 used 10 yr. for some types and 5 yr. for others; one used 5 yr. for all units; and one had completely written its off.

Perhaps a re-evaluation of the types of equipment and rates for depreciation of each type is in order.

5. Indirect labor percentage, when analyzed, revealed there are very erratic levels. This made our comparisons almost impossible, even in specific plant-size categories (Fig. 4). The great variations in the percentages indicated either that information was not complete or the meaning was not well understood.

The average for all firms studied was approximately 29% indirect, versus 71% direct labor hours. This relationship is not exorbitant. However, it would be well for those managements that find they are exceeding this figure to investigate the nature of the indirect man-hours in their plants and evaluate the prob-

On the 31 Participating Plants

designations as used in study

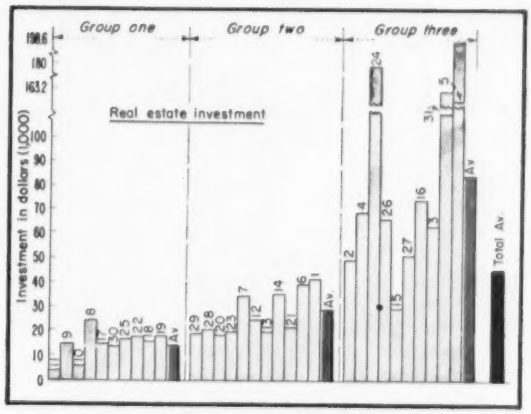


FIG. 3. IN THE FIRST TWO GROUPS, investment in real estate conforms closely to volume of plants. Larger processing groups, however, show erratic levels.

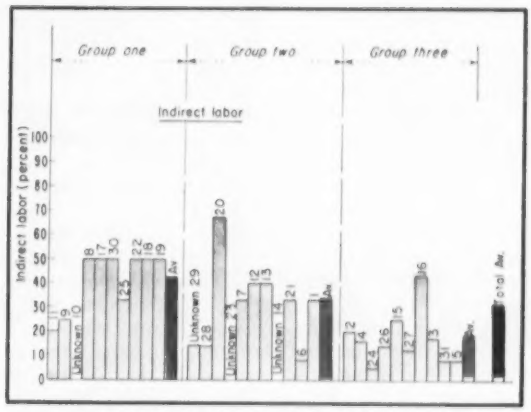


FIG. 4. SMALLER plants had the highest level of indirect labor. As this is not productive in actual bottling of the product, every effort should be made to reduce it.

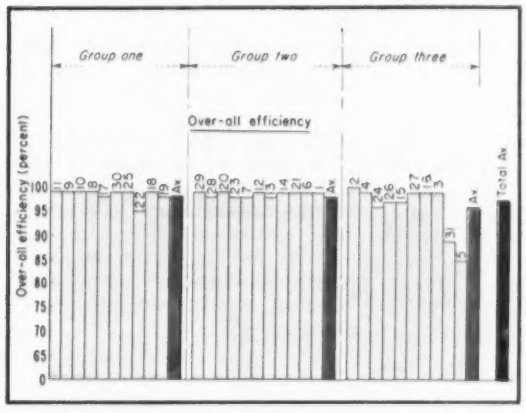


FIG. 7. GROUPS I and II showed extremely high plant efficiencies of 98%, but Group III declined to 96% due to poor showings of Plants 31 and 5.

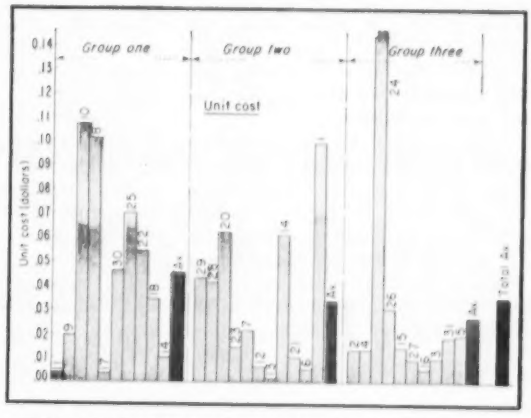


FIG. 8. ERRATIC NATURE of unit costs for the various plants points up the need for intensive analysis on the part of management in order to bring them down.

lem as one which is adding to the actual cost of production.

It is possible that some of the large-production firms that are able to hold their indirect labor at a very low level could contribute better understanding to the problem. At any rate, it calls for more intensive examination.

6. **Labor turnover** as high as 20% was recorded (Fig. 5)—in contrast to the national average for all industry of 3-4%. This points up the need for a better understanding of the reasons for workers being separated from firms.

It's evident that many managers do not understand the high cost of worker turnover. One basic reason for the high rate in this specific field is the long working hours. Granted, more attractive occupations offering more normal working hours per day are found in other fields.

7. **Machine efficiency.** When asked about this subject, most managers were unable to give more than estimates. And the erratic nature of these gages seems to indicate that the managers are failing to understand the importance of using such efficiency figures as valuable control tools.

Average efficiency for the 31 plants was estimated at 74% (Fig. 6). This figure should be given serious consideration, since it indicates that approximately 25% of machine capacity is going unused. It is evident that managers should begin planning for better utilization of their equipment.

8. **Over-All efficiency.** Most plants were found to have attained a very high average of efficiency in handling the product, and most were able to achieve a high level of production performance, which clearly shows that they have the kind of interest and understanding that is gained through long and conscientious effort (Fig. 7).

However, managers who can run up 97% efficiency in handling their products, with a spoilage level of only 3%, should by the same token be able to improve management principles and practices in other areas of the operation.

9. **Output.** In analyzing unit cost in dollars, it appeared that managers lack understanding—as well as sufficient records—for computing these

costs (Fig. 8). Management would find it very helpful to know its cost per unit, for this would help it to realize economies in all areas.

10. Productivity. It is generally considered a very effective measure to have information regarding the productivity per man-hour in the plant. This is a measure which currently does not seem to be widely used by dairy managers. Without such information, it is difficult to understand how a manager can know whether or not the units he is producing are being handled correctly by the man-power he has at his disposal.

11. Break-even points. One of the most interesting developments of the survey was the series of break-even graphs made for each of the plants (two of the graphs are shown on p. 55).

Information necessary to construct these were: Total quarts produced per year (in thousands); dollar volume in sales; fixed cost (comprised mainly of equipment cost, interest, taxes, insurance, and depreciation); and the variable cost per unit produced.

Erratic nature of the break-even points for all of the firms is significant. Comparing one with another, we were struck by our finding that some firms would not be able to operate without serious loss for any great period of time. It is also interesting to note that many of the firms would find it difficult to increase their profits appreciably even with a greatly expanded volume of sales.

Size of the firm did not seem indicative of the size of the profit yield.

We noted, too, that many firms didn't have satisfactory records readily available.

Processing Gets Major Attention

Managers are in need of a more adequate training to be able to develop their own factual information. The benefit derived would certainly arouse many to make good use of this type of data.

However, our outstanding observation in most of the plants visited was what the managers tended to neglect management – expending most of their efforts in actual processing operations and other duties.

This calls for restatement of a prime principle: True stature of a firm's management must be measured by its performance in planning the over-all operation of the plant, stating the objectives and the policies of the company, and then exercising the administrative ability to see that they are carried out.

Certainly, better utilization could be won with improved production scheduling and planning, based on known requirements for handling and setup, clean-up jobs, and other standardization of methods in each plant.

It is apparent that such cost-control techniques–which are found so very valuable in other branches of industry–are not notably employed by the plants covered in this survey.

These techniques include motion and time study, personnel planning, standardizations of methods and costs, wage incentives, and budgets for processing and handling departments.

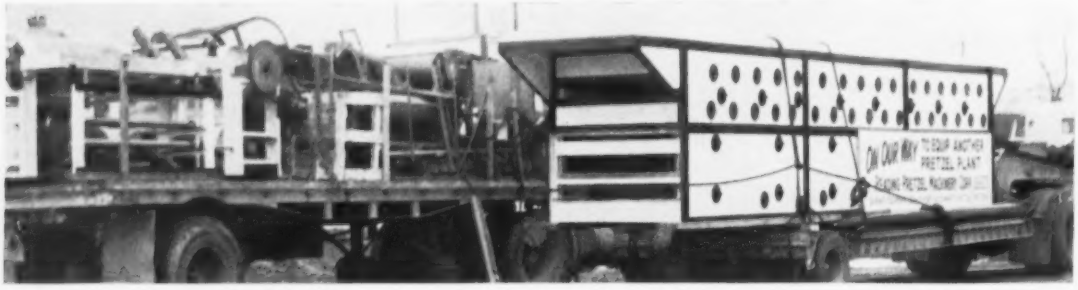
Wider use of these should make it possible to improve labor utilization without reduction in the workers' take-home pay. It would enable the cost per unit in production to be cut. Moreover, it would realize real savings in other areas.

In this specific branch of the industry studied–the dairy field–a very high degree of mechanization and closely controlled devices for processing have been developed. This is evident in such devices as short-time pasteurizers, bottle washing machines, automatic filling and capping equipment, and conveyors for bottles and cases.

However, this is merely the technical side.

Much greater understanding needs to be practiced before management techniques can be said to be as skilfully applied.

The wide variations found, and the evidence of data collected from the 31 processing plants, bring us to this generalization: The managers fully understand their dairy engineering. But they do not completely understand the actual functions and handling of what we call modern management.



WHOLE NEW LINE of pretzel-making equipment starts rolling to Chambersburg. Two big flat-beds carried the load–twisting machine, cooker-salter, oven, and conveyors.

Downtime Just 4 Days for Plant Modernization

Installation is sped by putting the job into the hands of expert engineers—men whose experience has "got it down to a science."

QUICK CHANGEOVER from the old to the new is a must when you modernize–whether the revamping be of a single line or of a whole plant.

For if the switch isn't fast, production will get snagged behind demand and losses of perishables will result.

Getting a new setup onstream with the requisite speed is a job for top-flight engineers, hence astute processors turn to experts for aid.

The case of Thomas Pretzel Co.,

(*Continued on page 151*)

BACKED UP BY MANAGEMENT, this plant's sanitation program really gets results. Here are three of the key operations: (Left) Spot-sift testing of raw materials gives a quick check for extraneous matter. (Center) Periodic dismantling of process equipment (like this sifter) enables inspection for insect infestation, also thorough cleaning. (Right) Spraying residual insecticide on floors, walls, and around equipment.

How Management Masterminds

Effective Preventive Sanitation

It actively participates in organizing and implementing an efficient program. Emphasis is on carefully selecting key personnel, checking their work, and assisting them when necessary. In addition, a sanitation consultant is employed for further guidance

H. GEDDES STANWAY
Vice President and Director, Skinner Mfg. Co., Omaha.

VITAL TO SUCCESS in any food-industry sanitation program are the active participation and sustained interest of top management.

For experience has shown that requested sanitary conditions cannot be realized merely by issuing written orders. What does succeed though is management's personal effort—even to the extent of an executive carrying out his own sanitary inspections. Thus, it cannot be over-emphasized that . . .

. . . A preventive sanitation program can be effective only when management makes its own regular inspections and obtains the cooperation of personnel involved.

At our plant, the sanitary program was, for many years, aimed at correction rather than prevention. But such a system, even though well-designed, is not the complete solution. Case histories indicate that many such projects are not only ineffective, but are costly and wasteful as well.

Systematic Program Pays Off

About three years ago, we accelerated our program to conform with federal, state, and local sanitary requirements in producing a more acceptable product free of contamination. Also, we aimed for a sysematized, preventive technique.

And to our surprise, it has paid dividends other than the initial objectives.

This program has boosted employee morale and reduced accidents. Furthermore, we believe it enables production of a higher-quality product. And most surprising, we now know that a well-organized program actually lowers rather than increases costs.

Basically, the program consists of scheduling, planning, and taking advantage of preventive steps.

We began by carefully considering which of the several supervisors on our plant staff might best head up the program. Opinion in the food industry differs on the question of whether the plant superintendent, plant engineer, quality control director, or others should take charge.

We felt that the choice should depend on personal characteristics of individuals available rather than on job classification. So we chose the superintendent of maintenance, because he was sanitation minded, conscientious, and thoroughly fa-

miliar with personnel, structure, and general plant equipment. More important, he was inclined to permit slovenly practices by his own men, yet critical of cleanup work being performed.

Quite often it is a good idea to give the fellow who criticizes it the responsibility for a clean-up job, especially if his own men need correction. And results to date have substantiated our decision.

The Sanitarian

Next, we realized that we should have a full-time plant sanitarian who would be personally responsible for the mechanics of the program. We wanted him personally to handle rodent bait, set out and maintain rat and mouse traps, check incoming ingredients for contamination, apply residual insecticide, supervise clean-up crew, keep records, etc.—all under the maintenance superintendent's supervision.

Here again, we do not feel it necessary that the plant sanitarian come from any given classification.

We were more interested in the individual and were successful in choosing a plant worker who had always performed a good job of keeping his own work areas clean.

He had neat habits, could keep records, showed a tendency to be a good supervisor, was agile and conscientious. He appeared to want to better himself and learn food-plant sanitation. An additional attribute was his quiet manner in performing assigned duties.

As a result, these two men—maintenance superintendent and sanitarian—have been carrying out a good and economical sanitation program, which is reflected in a record of less return goods, and freedom from regulatory action—or at least a good feeling that we are less vulnerable. And the work they perform undoubtedly has improved morale in the plant, since employees are working in an obviously cleaner environment.

Even with this good beginning, however, we feel that our sanitation program would not have been effective if it had not been for the active role management played in it.

Now, the plant sanitarian has a definite weekly work schedule with certain specific jobs numbered. On any given calendar day he knows that, for example, the morning will be spent in dismantling the sifter and spot-fumigating flour-handling equipment. The afternoon might be devoted to checking rodent-proofness of the plant, and in running his spot-sift test on raw materials.

He might not repeat these jobs for one or two weeks, or even a month, depending on required frequency. But, by looking at his schedule, he knows the job he will have to perform on any given day.

At the end of the week, and after completion of a number of such jobs, he turns a work sheet in to the supervisor. He also comments on obstacles against which he is powerless to proceed without help, on conditions that are not improving, and on certain trial remedies and their results.

The supervisor then reviews the reports, confers with the plant sanitarian, lends his help, and makes notes on the weekly worksheet. He then refers to an inspection form to be sure that the required work has been done.

Management's Role Stressed

The supervisor then adds his comments to the sheet and turns it over to the vice president and director (the author). Rather than handle these forms and other phases of the sanitation program as perfunctory, management also takes an active part by occasionally checking up on some of the work claimed to be completed or corrected. And conditions that the plant sanitarian or supervisor are powerless to correct, are given prompt attention.

Frequently, either during cleaning or immediately after, we personally inspect corners of dryers, floors, and window sills—often taking knife or

Systematic Cleaning and Inspection Keep Plant Shipshape

DAILY SANITATION REPORT

Skinner Manufacturing Co.

Date April 23, 1957
Signature C. O'Brien
Approved

Jobs accomplished	Time req.	Conditions noted	Date to be repeated	Mat'l & amt. used	Inventory remaining	Recommendations
Checked bait boxes for replacement, refilling, etc.	8 hours	Will give the results on the monthly rodent report at the end of the month.	Apr. 30, 1957	None		None
Checked against sleak on floor or against wall		Good condition	Apr. 30, 1957	None		None
Vacuum the spillage on the fourth floor		Good condition	Apr. 30, 1957	None		None
Dismantled the large vacuum cleaner, and cleaned it, also sprayed it		Good condition	May 23, 1957	½ gal. of residual spray		None
Vacuum the flooring of the old Nabalt dryer in the basement		Fairly good condition	When needed	None		None

DAILY SANITATION REPORT informs management of sanitary conditions throughout the plant. It shows the type and frequency of sanitation tasks, along with appropriate recommendations.

Week-End Cleanup Schedule

1st Week—Reddler
2nd Week—Flour Sifter
3rd Week—Inside of Presses
4th Week—Long Goods Dryer
5th Week—Bins on Third Floor

Regular Procedure For Weekly Sanitation

1. All overhead pipes and roofs of dryers.
2. All mixers.
3. Upper walk-way.
4. Short goods dryers and surrounding area.
5. Long goods dryers and surrounding area.
6. Work benches and tables.
7. Elevator pits.
8. Flour room. One bin cleaned (regular procedure).
9. Steam room.
10. Basement floor.
11. Beneath conveyors in basement.

WEEK-END CLEANUP FORM shows cleaning and inspection plan for key equipment and areas.

spoon and sifting through grit in corners, or between broken flooring, to check on contaminants. On occasion, lighter spraying of residuals is suggested in the interest of safety, and caution is advised in handling cases to curtail waste.

There is no hesitation on management's part to read each day's sanitation report and take cognizance of our plant sanitarian's recommendations. Also management is ready to commend personnel for a job well done. It prefers to arouse the human element by proper encouragements and respect for successful endeavor.

In addition, we use the services of an outside sanitation consultant firm, the American Sanitation Institute (a division of the Hugé Co., St. Louis). This organization makes periodic but unannounced inspections of our plant from a simulated or unofficial Food & Drug standpoint.

It works with the sanitarian and others in bringing to our attention modern preventive techniques from the outside, and helps us to correct any unsanitary practices or conditions we have overlooked. This firm reports directly to top management. Latter is then able to channel the criticism to those responsible.

Here again, the personnel know that top management is playing an active part by having their work checked by an unbiased, accredited outside agency.

Ounce of Prevention

Finally, through participation in this program, I had the opportunity of preparing an outline (reproduced below) on highlights of preventive sanitation.

It's used by distributors in their warehouses throughout the country. And it suggests proper storing of our products from the standpoints of sanitation and protecting them against insect invasion.

This outline has been well received and, we believe, has tremendously helped relations with our distributors and brokers. It has provided them with a workable tool that undoubtedly has cut down on return goods and has given better protection to our products.

Formerly, as evidence of our desire for an insect-free plant, we were fumigating annually. Because it required shutting down and sealing up of the building, the job was costly and sometimes really did not give a 100% kill.

We have now come to realize that, sometimes, general fumigation is an admission of defeat. We feel it should be used primarily when the insect-control situation is entirely out of hand. We have come to this conclusion because we know that weeks, or certainly a few months after the general fumigation, almost the same insect population can again build up unless a good control program is constantly in effect.

Of course, we realize that general fumigation can be an added precaution, but we don't believe it is necessary if a good program has been established and maintained on a preventative basis.

Executive management has a stake in all programs within its jurisdiction and, while it may delegate responsibilities and authority, it is not relieved of those responsibilities.

Highlights of Preventive Sanitation in Warehouses

This is the season for efforts on preventive sanitation in the field. Foresight is less expensive and less time consuming than hindsight. Why wait for infestation headaches?

Plant Program

It is well recognized that contamination in processing flour products is an accepted fact, but Skinner Manufacturing Company has in operation an extensive and expensive program of preventive sanitation to maintain at a minimum such contaminations. The program and inspections are participated in, in conjunction with the American Sanitation Institute, St. Louis, Mo.

Field Problem

Experience has shown that even the most elaborate preventive activity at the plant is not enough to eliminate Skinner goods from becoming contaminated in warehouses, retail storage and even shelf-space.

Research Results

Laboratory analyses over the past year or two have noted that the most serious contamination results from the insect family known as Dermestids, including primarily Cabinet Beetles and Carpet Beetles. These beetles in the early stages of life (larval stage), look like worms. Then later, they look like brown lady bugs about ⅛ in. oval shape—sometimes with wings.

Favorite places for these insects to breed are in dark unfrequented areas under wood floors and in false ceilings. Egg noodles is their favorite dish for rapid growth and multiplication, and they are able to bore through almost any shipping case, primarily cellophane-packed goods. These insects are seldom found as part of the flour or other basic macaroni products ingredients. Therefore, their source is invariably traced to warehousing facilities.

In the spring, adult Dermestids have a tendency to fly or glide, generally originating from outside plant growth, such as spirea. Therefore, screening is important.

Suggested Control Measures

1. Cases are best protected from wooden floor contamination by stacking on skids.
2. When skids are impractical, heavy paper spread between cases and flooring, will help deter contamination, especially if the paper is lightly sprayed with insecticide.
3. Floor treatment (as areas are vacated) with special insecticidal dry sweeping compounds, preferably Pyrenone Grain Protectant.
4. As a supplement to the dry powder sweeping, it is desirable to wet down the floor surfaces, and spray around wall cracks and skids, *with a 3% Methoxyclor-½% Lindane residual insecticide*. This wet application, used every 90 days, is a very effective control.
5. Check cracks in flooring by digging with sharp instrument to find beetles or larva skins.
6. Industrial vacuum cleaners are advisable to remove dust and small particles of food products on which the beetles also thrive.
7. Conscientious checks on proper stock turn-over to assure oldest merchandise moving in proper rotation.
8. A close periodic check of merchandise to eliminate contaminated products will help to reduce the rate of multiplication, and spread of contamination.

GETTING THE STORY TOLD: Reproduced above is text of poster that author prepared for distributors.

INTENSIVE INSTRUMENTATION

Keys Modern Processing Of Versatile

Nerve-centered by master control panel, new facility for spray-drying instant starch continuously produces improved food ingredient . . . Top purity assured by elaborate safeguards. Fine points of process detailed

R. SIEG
Development Engineer, Corn Products Refining Co., New York City

AUTOMATIC CONTROL of process variables and product quality—a major goal of food engineering—has virtually been achieved in modern production of spray-dried instant starch.

An outstanding example of this technical proficiency is Corn Product Refining Co.'s new million dollar facility at Corpus Christi, Tex. Here, in a continuous-automatic process, pre-gelatinized starch is atomized through high-pressure nozzles and dried in a hot-air stream.

And so extensive is the use of instrumentation that the entire operation requires only one man per shift.

Briefly, here are the four major production steps:

1. Regular wet-process starch is diluted from 36 to 11% solids, and salts are added.

2. Diluted slurry is instantaneously heated from 85 to 208F. by direct injection of 50-psi. steam, which pastes the starch.

3. Pasted starch is cooked for 30 min. to obtain desired viscosity characteristics.

4. Pre-cooked paste is then spray-dried to fine particles of uniform size (100% passing a 20-mesh screen and 70% a 200-mesh screen).

Open-air construction marks this installation, except for dust filters, starch wet-processing area, and product-packaging department.

Quality control is an outstanding feature of this process.

Product Finds Multiple Uses

Hailed as a major advance in food technology, the new spray-dried instant starch (tradenamed Snow Flake) is notable in having a number of diverse applications.

Prime uses are found in instant puddings, frozen and dry mixes, soup and gravy powders, sauce bases, confectionery products, bakery toppings, and salad dressings.

It can be used to make last-minute viscosity adjustments in the batch. And equally important, it eliminates the need for precision in adding liquid to obtain desired viscosity in any mix, whether in the production kettle or home kitchen.

A stabilized product free of any odor, off-color, or flavor, it is characterized by extremely fine, uniformly sized particles. Latter not only flow freely but can be dispersed evenly in liquids and powders. Density ranges 18-21 lb. per cu. ft.

Starch is packaged in asphalt-lined, multi-wall paper bags (50 lb. net).—R. S.

Special Purity Safeguards

Every material entering the process is specially refined to prevent development of any odor, off-color, or flavor in the finished product.

All dilution water passes through a charcoal absorber that removes all flavors and odors. Then comes filter polishing to prevent carryover of carbon particles. Steam for pasting the starch slurry is generated from the water in a special stainless steam-heated reboiler.

Gas for heating all inlet air to the dryer passes through an iron-oxide column, then through two columns of activated carbon to remove mercaptans or any other obnoxious compounds that might be absorbed by the product.

Incoming starch slurry is put through a 200-270 mesh screen before being pasted and dried. And all equipment contacting the starch is of 316 stainless steel.

Now for details of the process:

Automatic Process Controls

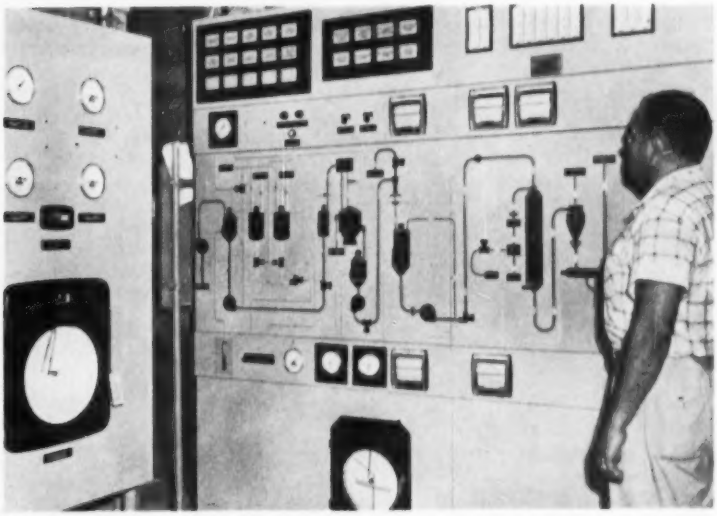
As shown on the accompanying flowsheet, starch slurry (36% solids) is received in a 1,700-gal. agitated tank. After addition of dilution water and a salt solution, it is pumped successively through a 200-gal. agitated dilution tank, a flow-rate indicator, a special density controller, and a vibrating screen.

Salt solution, which guards final-product quality, is automatically metered in proportion to the flow of diluted slurry, being manually corrected for concentration of starch. Cleaned, diluted slurry is stored in a 5,000-gal. agitated surge tank at 85F.

Flow of starch through dilution and screening stations is controlled by liquid level in this surge tank. Outflow is regulated (at 20-25 gpm.) by the level in the paste tank, where starch is cooked.

En route, slurry is pumped to an instantaneous heater, where the

Operation Is Multi-Stage—Yet Controlled by 1 Man



THIS GRAPHIC PANEL monitors all operations in production of instant starch—a process so nearly automatic that it's controlled by one man.

Product

starch is pasted. Temperature of this paste controls flow of steam from reboiler to heater.

Pasted material discharges directly into an agitated holding tank (1,100 gal.), which is steam-jacketed to minimize heat losses. Here, liquid level is maintained high enough to assure an average cooking time of 20-40 min.

A sanitary gear-type pump, automatically controlled at 40 psi., transfers cooked paste from holding tank to a triplex pump. Powered by 125-hp. motor, latter supplies pressure-type, atomizing nozzles in the spray-drying chamber.

Nominal rate through the triplex pump is 24 gpm., and its speed is automatically regulated to maintain required discharge pressure (6,500 psi.).

Giant Spray Dryer

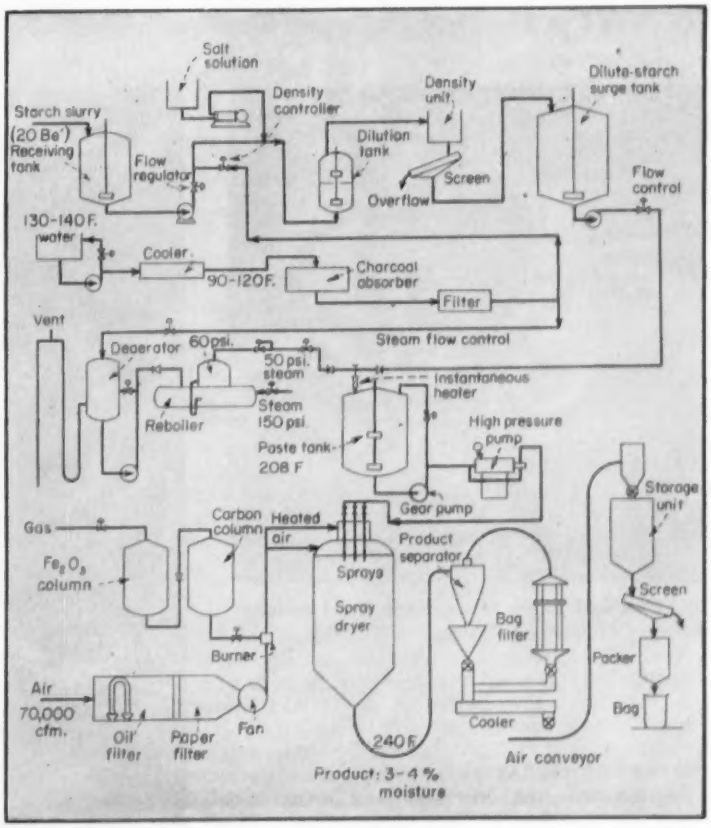
Hot, cooked starch is sprayed into a drying chamber of 24-ft. dia. and 37 ft. high. A 250-hp. blower supplies 60,000-70,000 cfm. of air, which is filtered and heated to between 350 and 450F. Air is purified by passing, consecutively, through an oil bath, and a 10-ply dry filter paper (S Media). Static pressure in the dryer is about 10 in. of water.

Air is heated by burning deodorized natural gas in the air stream. Temperature of inlet air varies as the automatically controlled gas flow to the burner changes to maintain the dryer outlet air temperature at 245-255F. Product is dried to 3-4% moisture.

Efficient Dust Recovery

Instant starch is discharged from drying chamber along with the outlet air stream. Bulk of the product is separated in four high-efficiency cyclones of 7-ft. dia. These operate in parallel. Static-pressure drop through these units is 6 in. of water.

Turn page

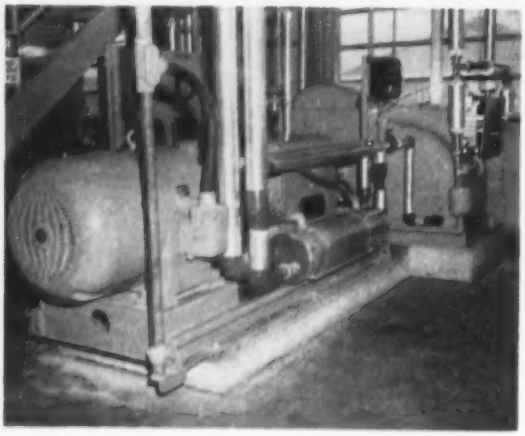


SCHEMATIC of instant-starch process shows stepwise conversion of 20 Bé slurry to dry product (3-4% moisture).

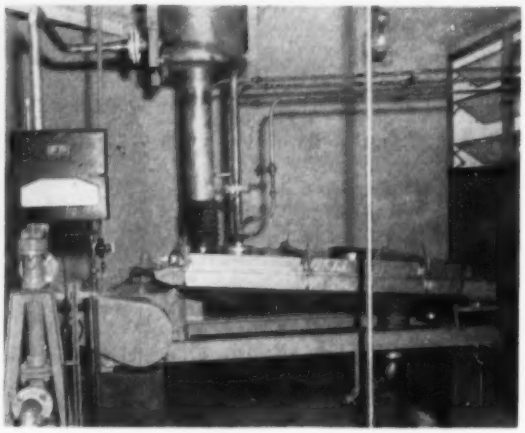
Dust passing through the cyclones is removed in a continuous bag collector, which operates with a 3-5-in. static-pressure drop. This filter contains 144 Orlon tubes, each of 9-in. dia. and 15 ft. long. Such bags will tolerate temperatures of 275F.

Dust from filters is combined with product from cyclones and cooled in a water-jacketed screw conveyor 18 ft. long. Then, starch is air-conveyed to a storage unit large enough to hold the output of three working shifts. The starch is bagged after passing 20-mesh screen (30 x 60 in.).

Key Processing Units in Non-Stop Automatic Line

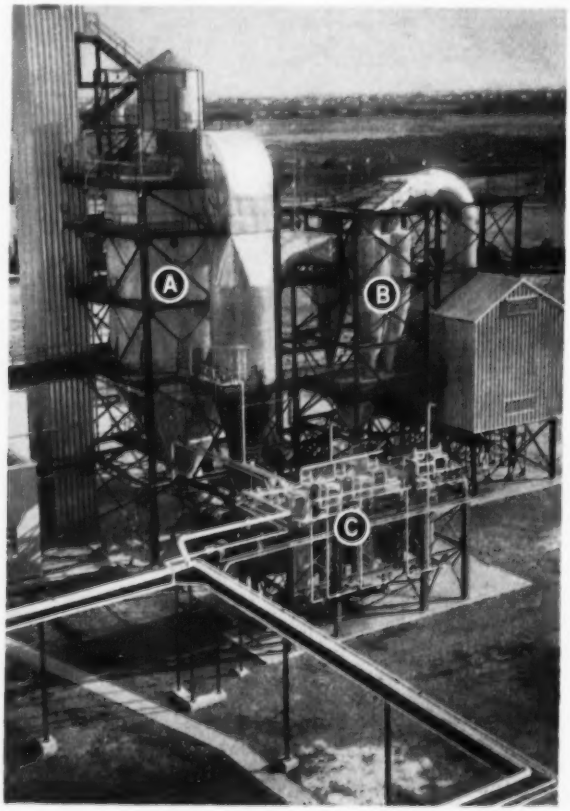


DENSITY CONTROLLER continuously checks dilution of incoming starch slurry. Vibrating screen (200-270 mesh) assures product purity.



HUGE TRIPLEX PUMP, powered by 125-hp. motor, boosts pressure on cooked starch to 6,500 psi. in feeding atomizing nozzles of spray dryer.

DRYER IN ACTION: Special nozzle design produces uniformly fine particles that are readily soluble.



37-FT.-HIGH SPRAY DRYER (A) uses 60,000-70,000-cfm. of filtered air. Latter is preheated by burning deodorized natural gas in the air stream. Dried product is separated by cyclones (B) and bag-type dust filter (not visible). Note gas filter unit (C).

2-IN-1 COMPARTMENTATION of trailer is indicated by separate doors to the dairy section (rear) and the frozen food section (front). Note that forward door incorporates a "working" door (arrow). Latter's smaller size prevents excessive losses of refrigeration.

Ships vari-temperature foods in one—

Versatile Dual-Load Trailer

Its individually refrigerated compartments pay off by delivering bigger, more economical loads in less runs

THE DUAL-LOAD TRACTOR-TRAILER COMBINATION now in use in the Midwest permits the shipment of food products with different temperature requirements in the same vehicle.

Currently employing the versatile food-trucking system is Marsh Foodliners, Inc., Indiana supermarket chain. It has enabled the company to ship dairy and frozen foods together.

Main advantage of the system lies in its economy. At Marsh, the new units have replaced the old smaller standard trucks or trailers. Each of these had carried but one type of product, thus necessitating a large number of deliveries.

The new bigger tractor-trailer units permit carriage of maximum allowable payloads, utilizing all cargo space and cutting down on the number of deliveries.

In the 35,000-lb. payload trailers used by the Indiana firm, the front third of the space accommodates frozen foods. The rear two-thirds is used for dairy products kept at higher temperature. Each compartment is separately insulated and refrigerated.

Four of the dual-load trailers are now rolling as part of the fleet that services the company's 27 outlets in the area of some 11,000 square miles. Deliveries are made four times a week.

Twenty-six van-type non-refrigerated trailers complete the fleet. These are assigned for delivery of dry groceries.

Construction Details

The forward frozen food compartment has 6 in. of insulation. Here, the refrigeration is capable of maintaining an enroute temperature of —10F.

The dairy section requires only 3 in. of insulation, temperature here being maintained at 35F.

Each compartment has its own refrigeration unit and separate evaporator, back-pressure valves, and four-way valves. Two types of units are employed: Tru-Cooler bottled gas units, and Kold-Hold plates.

The bulkhead between the compartments is immovable, but an emergency door gives access from one section to the other.

The present arrangement requires that the forward compartment be reached through a full-height, gasketted door on the right side of the trailer. To insure constant temperature, however, a smaller door within the larger one permits loading and unloading, either by hand or roller conveyor.

The higher-temperature dairy foods compartment is reached through a full-size door. No midget door is needed.

The tractor-trailer combination comprises cab-over-engine tractor and 35-ft. tandem trailer. Length is within the legal limit of 50 ft. Tires on both tractor and trailer are interchangeable. One spare is carried on the trailer.

The trailer is equipped with the Fruehauf sliding tandem device, which permits forward or backward movement of the axle assembly. Thus, the gross weight may be adjusted to prevent exceeding of the allowable weights.

Fast 2-in-1 Line Makes

High capacity and efficiency are coupled with versatility in new 600-doz.-per-hr. doughnut line. Ingenious engineering of series of unit operations — from forming to cooling — makes it possible

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

YOU CAN TAKE some tips on high-speed, efficient production of many varieties of one item from Hall Baking Co., Cleveland. And you will find advances in unit operations—all the way from forming to cooling—in Hall's pacesetting new doughnut operation.

An outstanding feature of the new line, engineered by DCA Food Industries, Inc., New York City, is automatic, continuous cooling. Like the other new or advanced unit operations, it may be adapted to food products other than doughnuts.

2-in-1 Line

The new line at Hall has provided these three significant benefits:

1. **Continuous operation**—There's no time lost in switching from one product to another. With proofer and fryer synchronized, yeast-raised goods can be timed through the proofer so that they follow the tail-end cake doughnuts going through the fryer.

2. **Greater product uniformity**—Proofer and cooler have automatic humidity controls that curb excessive fat absorption, prevent dough from sticking to plaques, and overcome rough, split crusts caused by insufficient dough volume.

3. **Fewer personnel required**—Number of operators has been cut from the 13 formerly needed for two separate lines to only 5 on the new single line. Now, two men produce cake doughnuts and three men turn out the yeast-raised goods, the 8 other workers having been assigned elsewhere in the bakery.

HERE THEY ARE, all shapes, sizes, and varieties of doughnuts (photos at left and right) that can be made on versatile, highly efficient production line.

The doughnut line, occupying a mere 20x80 ft. of floor space, operates at 440 doz./hr. on yeast-raised goods and 480 doz./hr. on cake doughnuts, both types averaging 22 oz./doz. On smaller doughnuts, rated capacity is 600 doz./hr., according to DCA.

Yeast-Raised Goods

To visualize the efficiency of this highly flexible line, it's pertinent to look closely at some of the advanced unit operations, starting with production of yeast-raised goods.

Dough is transferred to a 200-lb.-capacity conical hopper that feeds an automatic 2-headed cutting machine. Then a screw-operated cover is locked on the hopper.

Forming—Introduction of compressed air (35-40 psi.) forces dough through two clutch-operated cutters. Here, it is uniformly extruded into desired shapes by use of quickly interchangeable cutters (for stick, jelly and ring doughnuts). Next, pieces are sliced and deposited, two at a time, onto cloth-screen proofing plaques (28x33 in.). Latter are flour-dusted and each holds 48 doughnuts.

Dough-cutting and plaque-travel speeds are synchronized. Weight of dough pieces is easily controlled by adjusting air-pressure valves. And cutting speeds are regulated by a variable-speed drive.

Proofing—Here, dough pieces are leavened and relaxed to desired pliability as they proceed through an enclosed, gas-fired proofer (6x12 ft.). Latter is temperature- and humidity-controlled, and rated at 100,000 Btu. per hr. Dry- and wet-bulb temperatures are panel-regulated, and a convenient humidity-chart guide is used to compute proper settings. Moisture is supplied by instantaneous water vaporizers.

In operation, loaded plaques are placed on proofer's feed table and transferred onto air-pressure-operated

68 Varieties of Product

chains that make four vertical passes. Proofer is actuated by a timing switch located on the feed table.

As the mechanism automatically cycles, a plaque moves ahead to permit the next one to enter. Travel time through the 54-plaque unit can readily be controlled and the timing device is usually set for 20-30 min.

Proofer's release door automatically opens to deliver plaques to the discharge table. They travel to the fryer's feed table, where screen and cloth are removed and doughnuts enter fryer.

Transfer is accomplished in this manner:

A tray-advance mechanism on the cloth-transfer unit engages the screen and advances it toward fryer. Inclined portion of fryer's feed table has hooks on traveling chains that free the cloth from screen. Latter automatically drops into a stacking rack.

Released cloth advances to transfer point, where proofed pieces continue (on rollers) onto a chute and into fryer. Cloths proceed around return leg of conveyor and to the underside, where they drop into a collecting rack.

Cake-Type Doughnuts

From the fryer, handling of yeast-raised goods is similar to that for cake-type doughnuts.

For the latter, batter is batch-mixed and transferred to the twin-feed hopper, where six cutting heads (interchangeable by screwing off and on) form pieces of varying shapes and sizes (10 to 30 oz. per doz.). This unit is positioned at feed end of fryer, and removed when line is set up to run yeast-raised goods.

Frying–Special design of the fryer (3x4x12¼ ft.) permits rapid change-over from surface frying (as of Bismarcks, twists, raised rings, pretzels, French crullers, Pershing rolls, etc.) to submerge frying (of sticks, long-johns, etc.).

Surface-frying unit has a conveyor with spacer bars on 3¾-in. centers. This assembly is quickly and easily inserted, and is interchangeable with the submerger conveyor. It is lifted out of fryer simply by unlocking a pair of clamps, and is raised to disengage a pair of spur gears. A turner hand can be adjusted vertically for different products.

The submerger, too, can easily be removed by disengaging two clamps and raising it vertically.

Now for the efficient handling of frying fat:

Drums holding 400-lb. of shortening are raised by chain-hoist and discharged into a stainless melting tank (3,000-lb. capacity). Each drum is lowered onto a stainless dump stand. As shortening liquefies, it slides into the melting tank. Steam coils at bottom of tank heat shortening to 110F.

Melted shortening is then pumped to the stainless frying kettle, (1,000-lb. capacity), which is equipped with 24 stainless tubes (2½ in. dia.) for uniform heat-transfer.

Fat level is controlled by an adjustable dam inside the kettle. Overflow goes into a 200-lb. capacity tank in lower part of fryer. To replace fat absorbed by doughnuts, a ¼-hp. pump feeds melted shortening from surplus tank to kettle. Temperature of fat is thermostatically controlled.

From fryer, doughnuts drop onto a 16 in. x 10-ft. Neoprene belt, then enter a 2x2½-ft. chain conveyor that transfers them to a 32 in. x 10-ft. chain-driven rod conveyor feeding a glazer-stacker.

Doughnuts are removed from glazer by a "take-off" belt that transfers them onto cooling screens (25x34 in.). Plain doughnuts and those to be sugar-coated bypass the glazer.

Cooling–Screens carrying doughnuts are automatically moved into position (one at a time) from a magazine, and they feed to the enclosed 60-screen cooler by a pneumatic loading mechanism (60 psi.).

As each screen-load arrives at the cooler, a switch is tripped to open the door and carry the screen into the unit. As the mechanism cycles, each screen moves ahead a step to permit the next one to enter the cooler.

Following cooling (which is adjustable), cooler's release door automatically opens to discharge cooled doughnuts. Glazed doughnuts are delivered directly to the packing table on the screens. Empty screens

discharge from packing table onto a truck.

Screens with doughnuts to be sugared proceed to a dump conveyor that tilts the screens to free the goods. Empty screens are fed to a truck below the conveyor, and doughnuts are conveyed to sugaring machines or packing table.

Cooler (3½x7⅞x12½ ft.) is equipped with two humidifiers and two air blowers (1,800 and 3,000 cfm.). Temperature and air velocity are automatically controlled for uniform cooling and drying.

Air is filtered, humidified with water sprays, and forced into the cooler by a 24-in. fan. A similar one pulls the air out.

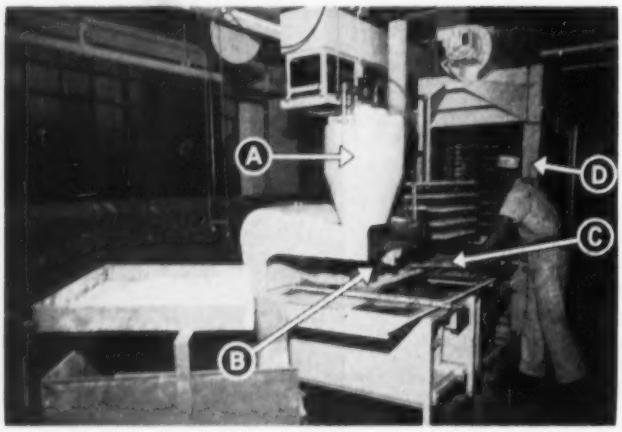
Baked goods are usually cooled by exposing them to atmospheric conditions until they arrive at room temperature, or a few degrees above it. With cake doughnuts, some evaporation of water is desirable and usually accompanies cooling.

However, such evaporation is not usually controllable in standard cooling procedures, hence the advantages of this new unit (Velo-Mist).

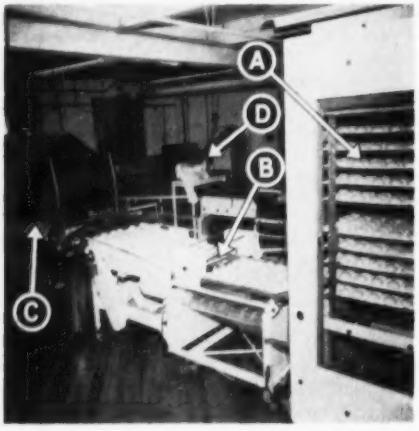
It is designed to bring doughnuts to proper condition for sugaring (correct moisture content and temperature) in about half the time conventionally required. The is accomplished by adjusting humidity in the cooler to slightly less than the moisture-vapor equilibrium of product.

This cooler may be used for goods weighing up to 2 oz. per unit. Because humidity in the cooler is variable, and air velocities are high, moisture loss and cooling time are closely controlled. For cooling glazed raised doughnuts, no water vapor is introduced because only cooling and maximum surface evaporation are desired. —*End*

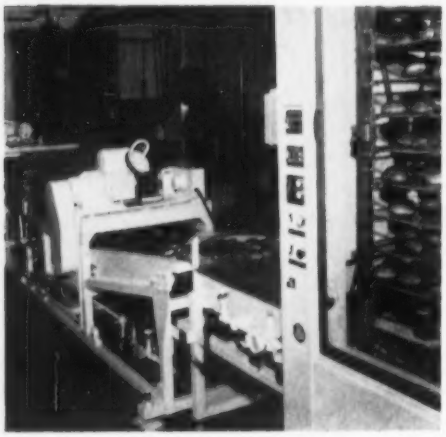
Four Prime Steps in Doughnut-Making



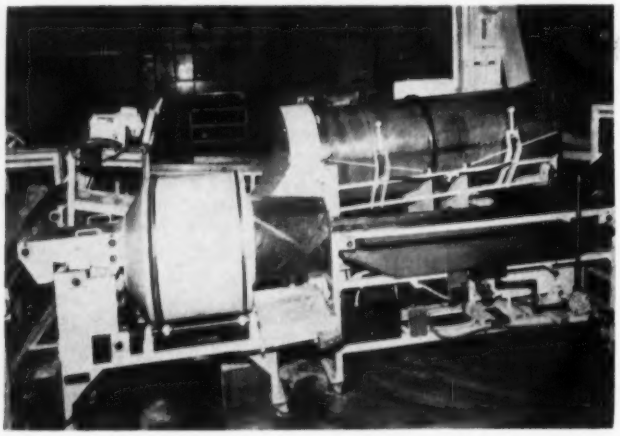
START of 2-in-1 line: Dough for yeast-raised goods is loaded into hopper (A) and extruded under air pressure through cutters (B). Extruded dough drops onto dusted cloth and screen plaques that advance to feed table (C) for automatic loading into proofer (D). Flour dusting unit is in foreground.



COMING OUT of proofer (A), yeast-raised goods proceed to feed table (B) that's synchronized with fryer (C). To switch over to cake doughnuts, the cutting machine (not shown) is positioned at feed end of fryer. Note fat-melting kettle (D).



FROM glazer-stacker (left), screen loads of fried, glazed (or unglazed), and partially cooled doughnuts enter humidity- and air-velocity controlled cooler (seen in right foreground).



SUGARING: Doughnuts from conveyor (right) pass through one of two sugaring units on way to packing table (far left). Here, they are packaged in any of four types of different-size cartons. Plain and glazed goods are similarly handled.

NO PROBLEM of floor maintenance here. Protected by a special hard topping, concrete surfaces, such as this one in big bottling plant, withstand years of rugged service. And they are easy to keep spic and span.

Brand new surfacing? *Actually, it's 8 yr. old, proving—*

Long, Hard Service Doesn't Faze Special Concrete Flooring

Granolithic topping does the trick—minimizing maintenance, simplifying cleaning, and helping to make Dr. Pepper's Dallas plant a showplace

PROPERLY SURFACE your concrete floors and they'll take years of rough punishment without causing major maintenance problems—extensive cracking, rutting, or eroding.

Furthermore, such floors will be easy to keep clean and bright, thus providing tangible evidence of your good housekeeping.

For example, take the Dallas plant of Dr. Pepper Bottling Co., which has a total floor area of some 293,000 sq. ft. Eight years ago, a special-process granolithic topping was laid on the concrete floors of the production and storage areas. This hard-topped surface has not only stood up to heavy fork-truck traffic, impact, and erosion, but actually seems to have improved with age, according to W. A. Hardesty, the company's building and production manager.

No section of floor has had to be replaced or repaired. And sanitation costs have been minimized because all that's required for efficient cleaning is application of ordinary scrubber vacuums and the usual solutions.

How Topping Is Applied

This heavy-duty surface was installed by means of a special absorption process developed by Kalman Floor Co., New York City. Here's the technique:

After the general contractor lays the underslab concrete, a ¾-in. wearing course is applied. This work is done by a national company whose crews are specially trained for the job. The topping is formulated with a high water-cement ratio, and excess moisture is subsequently drawn off by applying "absorbing" blankets to the surface. Latter is then compacted and troweled by machine, and finally given extensive hand-troweling.

Achievement of the dense, hard floor that is so smooth and long-lasting is credited to uniform distribution of the basalt aggregate employed.

How well this topping has resisted typical floor-maintenance hazards may be seen in this review of its 8-yr. performance in Dr. Pepper's various departments:

Sugar-storage: This second-floor area (4,700 sq. ft.) has remained smooth and non-dusting — as required to facilitate movement of heavily laden fork trucks (4,200-lb. loads). In addition, the floor has proved its strength in supporting a total dead weight of 3,500,000 lb.

Of course, overall sound construction of the floor is of prime importance. But it is also most essential that the topping be permanently bonded to the underslab to avoid cracking and other imperfections.

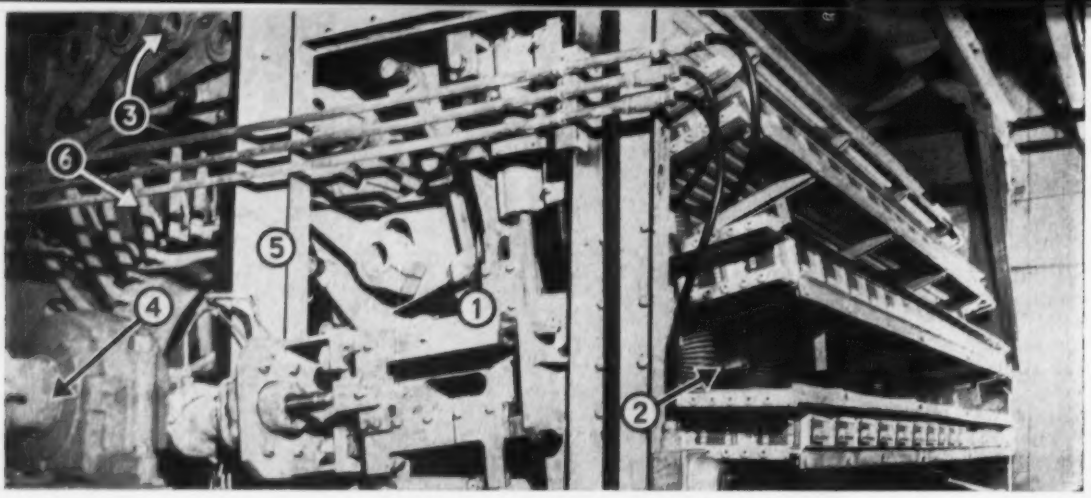
Operation on this floor involves transporting sugar bags to hoppers, into which the sugar is discharged. Any floor dust here would be intolerable. And floor cracks would harbor spilt sugar, which might promote bacterial growth. These sanitation hazards, however, are precluded by the floor's dense structure.

Drum- and jug-filling: In this ground floor area, syrup is piped to automatic measuring and filling outlets.

Employed here is an attractive red topping (7,500 sq. ft.) of the same granolithic hardness as in the sugar-storage area. Reason: 55-gal. stainless drums are rolled off filling racks onto the floor. Also, this floor must be able to withstand any unavoidable drippage or overflows.

In Mr. Hardesty's opinion, a floor

(*Turn to page 73*)



FREEZER comprises 30 pairs of refrigerated plates (one fixed, one floating) that are rotated intermittently by indexing device (1). Coil springs (2) hold floating plate firmly against packages during rotation, cam-arms (3) force it away at feed and discharge ports. Refrigerant enters through hollow axle (4), flows to manifold (5), is fed to plates through hoses (6). Unit is installed in cork insulated room.

Radial-Plate Freezer Achieves Low-Cost Operation

—by utilizing space-saving, mechanically efficient intermittent rotation of refrigerated plates around a central axle

C. R. HAVIGHORST
Senior Associate Editor, "Food Engineering"

A NEW TYPE food freezer that utilizes the principle of intermittent rotation of refrigerated plates around a center axle, has just been introduced following an 18-month "shake-down" operation.

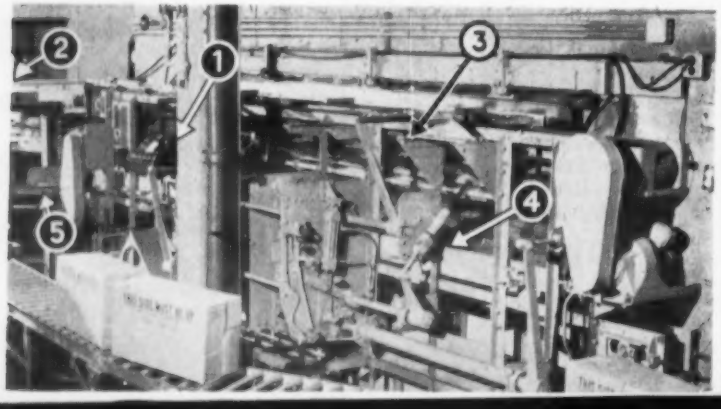
Manufactured by the Canning Machinery Div., Food Machinery & Chemical Corp., the unit is installed in the Seattle plant of Regal Ice Cream Co. Here it is quick freezing rectangular packages of ice cream, at the rate of 550-600 gph. of pints or quarts, or 500 gph. of ½-gallons.

Operation is semi-automatic, requiring one employee to press a button when proper number of cartons is assembled on feed conveyor. This actuates a feed bar that pushes the load into the space between two freezer plates. An electrical relay system controls all other operations.

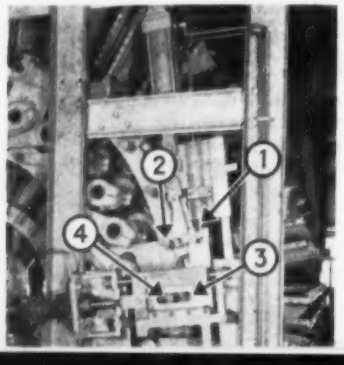
Called the Radial plate hardener, the unit has 30 pairs of 21x120 in. freezer plates radiating from a central, hollow driven axle. Each plate has 14 refrigeration passes (⅛x½ in.) providing efficient and rapid heat transfer.

In each pair of plates, the lower one is fixed to the axle. Upper (floating) plate is supported by pivot connections to four arms that are also fixed to the axle. A series of 11 coil springs are attached to bottom of fixed and top of floating plates.

FEED AND DISCHARGE ASSEMBLIES are on outside of insulated room. They comprise: Operating console (1), conveyor from filler to hardener (2), pusher bar that sweeps cartons through port in insulated wall and onto freezer plate (3), lowering device (4), discharge conveyor (5).



HOW INDEXER WORKS. When feed-discharge counter is satisfied, electrical relay causes pawl (1) to engage pin (2). Then slotted lock (3) releases its pin (4), hydraulic cylinder rotates plates one increment, and retracts pawl.



How 3 cold storage problems were solved with Armorply

Problem: Need storage space in a hurry! Solution: this 32′ x 30′ x 9′ Armorply Freezer Room was completely assembled and put into operation in *one week!* Armorply room at Ritter & Sussman, 145 Emmett St., Newark, N. J.

Problem: Need expandable storage space! Their first 36,000 cu. ft. Armorply room was soon outgrown by Berkshire Frosted Foods, Pittsfield, Mass. Solution: another 24,000 cu. ft. was added on with Armorply modular panels by 3 unskilled men.

Problem: No room for storage in the plant! Solution: concrete slab was poured in the back yard of Pure Food Company, Westchester, N. Y.—and the Armorply room was built on the slab. Armorply's metal faces reflect away sun's heat in summer—keep operating costs down.

Freezer rooms constructed of Armorply panels are easy to build, move, alter in shape or size. Armorply—metal-clad plywood—keeps clean, too!

From "Blue Chip" corporations—like National Biscuit Co., and Armour & Co.—to independent supermarkets, the big news in temperature-controlled rooms is Armorply. This metal-faced plywood is built by Freezer Box Division, Annapolis Yacht Yard, into modular units which go together easily . . . can be moved or altered in shape by untrained workmen . . . and more important, maintain temperatures down to −100°.

Armorply is available with facings of stainless steel, aluminum, monel, copper or any other metal. The panels are lightweight, remarkably strong and impervious to moisture and decay. Best of all, you can have all the advantages of Armorply for about the same cost as ordinary plaster and insulation units.

Armorply is manufactured by United States Plywood Corporation—and Armorply cold storage rooms are made and sold by Freezer Box Division, Annapolis Yacht Yard, Annapolis, Maryland. For more information, send coupon.

Weldwood

Weldwood® Armorply®

METAL-CLAD PLYWOOD

A product of

UNITED STATES PLYWOOD CORPORATION

Weldwood—The Best Known Name in Plywood

United States Plywood Corporation
55 W. 44th St., New York 36, N. Y. FE 7-57

☐ Please send me free sample of Armorply and descriptive literature.

☐ Please have representative call. I understand there is no obligation.

NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

B.F.Goodrich

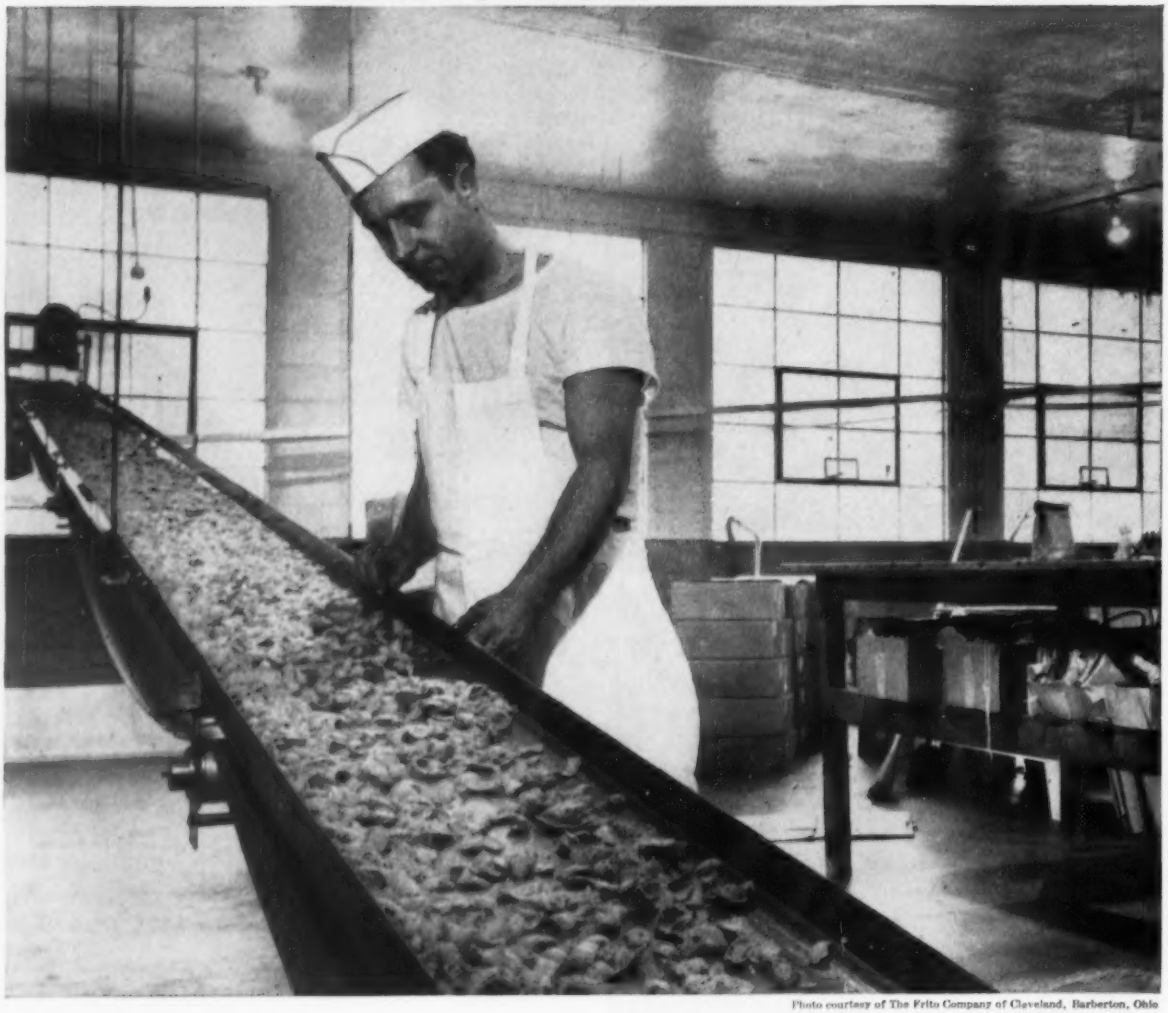


Photo courtesy of The Frito Company of Cleveland, Barberton, Ohio

Easy-to-clean Koroseal belt stands grease, salt—never gets rancid

IN this plant, the combination of salt and cooking oil on the hot chips used to mean short conveyor belt life. The cotton belt they were using was hard to clean, had to be boiled in caustic soda every week. What's more, it stretched, had to be refastened all too often.

Then the Koroseal belt in the picture was tried, and it solved all these problems at once. Because it's made of Koroseal flexible material, this B. F. Goodrich belt stands cooking oils, abrasive salt, animal fats, most acids as well as hard use, and just about everything else that ruins most materials.

Food particles can't grind into Koroseal's smooth, polished surface. That's why it is so easy to clean. A damp squeegee cleans the belt in the picture each time it passes by. Other users say that just a quick wipe with a damp cloth and detergent, and the Koroseal belt is as clean and new looking as ever.

Since Koroseal is completely waterproof, the belt never gets damp or soggy, and so can be used right after washing. Koroseal resists cracking and peeling, never gets soft or sticky. And, of course, there's no danger of contamination with Koroseal—it has no odor, no taste, never gets rancid.

Get in touch with a B. F. Goodrich distributor and let him tell you more about the line of belts developed by B. F. Goodrich for the food industry. *B. F. Goodrich Industrial Products Co., Dept. M-110, Akron 18, Ohio.*

Koroseal—T. M. Reg. U. S. Pat. Off.

B.F.Goodrich

INDUSTRIAL PRODUCTS

← For more data, circle this page number on card at back

This spring-load provides a constant, uniform pressure of about 500 lb. on the charge of filled cartons residing between the pair of plates. It is sufficient to achieve intimate contact and to hold cartons gently, but firmly between the plates as they are rotated.

Interstice between plates is self-adjusting to accept packages varying in thickness from 2 to 3¼ in. And the spaces accommodate full plate loads (21x120 in.) of conventional pt., qt. or ½-gal. cartons. Freezer provides residence for 5,046 pt., 2,346 qt., or 1,700 ½-gal. packages.

A 1½ hp. pump provides 700 psi. to a 2-stage hydraulic pressure system, that intermittantly rotates freezer plates, actuates feed and discharge plunger bars and the carton lowering device. The full pressure is utilized by the hydraulic indexing mechanism to rotate the plates. For the feed, lowering device, and discharge bars, it is reduced to 350 psi.

Plates Carefully Indexed

The machine employs a unique plate indexing device that is comprised of two hydraulic rams. One controls the pawl and the other the locking mechanism.

On outer side of drive-ring are a series of indexing pins. To index the plates, the pawl engages a pin, the preceeding pin is released from the lock, and the pawl rotates the machine one position. The pawl releases this pin when it is locked, then returns to its repose position directly before the next bar, ready to repeat the cycle.

Simultaneously, the floating plate of the pair moving to the discharge position, is elevated 2 in. by a cam arrangement. This retracts the springs and releases the pressure to permit unloading. Plates remain in open position through both the discharge and loading operations. Then the cam is disengaged and the floating plate closes by spring pressure.

Each set of plates is equipped with its own hydraulically-operated discharge plunger-bar which, when in repose, is retracted from the plate interstice. As plates reach unloading port, this bar is engaged in end slots of two pulling arms that rest in guide tracks at the discharge position. These arms are part of carton discharge hydraulic assembly axle that intermittently moves row after row of cartons from between the plates. This axle also ploughs accumulated frost from the lower plate.

Attached to discharge-bar assembly is an automatic counter. It counts the rows of cartons being fed and discharged, and actuates the plate indexing device. Cams, set at its calibrated arc, determine distance feed and discharge bars move to load or unload one row of cartons.

Push-Button Operation

When operator presses the push-button, he sets off a series of steps controlled by the electrical relay system. A row of cartons is fed into the unit and, simultaneously, a row is discharged onto the hydraulic elevator. This unit gently lowers the cartons onto the take-away conveyor. Above cycle is repeated each time the button is pressed until the automatic counter is satisfied.

At extremities of counter's arc are two sensitive switches. When preset row-count is made, final cams of counter strike these switches. This actuates the part of the relay system that: (1) Returns counter to starting position; (2) returns discharge plunger-bar to original position of repose, and (3) actuates plate-indexing assembly and moves plates one increment.

Installation and Refrigeration

Unit is installed in a 6 in. cork insulated room 11 ft. high, 16½ ft. wide, and 22 ft. long.

Its plates are maintained at −30-35F. by ammonia, pumped at 15 psi. through the rotary joint of the hollow, interrupted axle and through four pipes into the circular manifold. Each of the 60 plates is served from the manifold by ¼ in. I.D. hoses.

Plate orifices are designed to uniformly meter refrigerant to each of the 14 passes, no matter what plane they may be in during their rotation. Suction to low-pressure receiver is through a similar manifold arrangement at the opposite end of the unit.

Although the freezer at Regal is operated with ammonia, it is designed for use with Freon as the refrigerant if desired. Refrigeration required to maintain a −35F. plate temperature is estimated at 20 tons.

Low operating cost is achieved largely through use of hydraulic power. A total of 5¼ hp. of connected load is required. This is broken down as follows: The 1½ hp. hydraulic pump; a 3 hp. ammonia pump, and two ½-hp. motors that power feed and take-away conveyors.

—*End*

Special Concrete Flooring

—*Continued from page 69*

of less hardness and density would have failed from steady erosion.

The surface is cleaned regularly with scalding hot water, and is frequently brushed and polished. As for the red hue, it was found that a colored floor inspires cleanliness, also gives visitors and employees a feeling of modern efficiency.

Drum-sterilizing: In this department, returned syrup drums are inspected, repaired, and cleaned.

Each drum is scalded with a cleaning solution and rinsed with hot water prior to refilling. During this operation, drums are racked on a wooden platform, then up-ended. In this routine, they drop on the floor with considerable force. Then, they are tilted and spun across the floor.

Of course, there is some unavoidable wear here. The drum operations subject the floor to rough punishment and, where drum edges hit the concrete, a channel has actually been chipped out. Similarly, tilting of the drums and dragging them across the floor has caused some breakdown at edges of floor sections.

Nevertheless, the heavy-duty topping has proved out. It has withstood the beating far better than regular concrete, according to the plant manager.

An additional wear factor is entailed by repeated hosing of this floor with hot water and cleaning solutions. But this treatment has not caused any marked deterioration.

Bottling department: In this 4,000-sq. ft. area, a stainless conveyor speeds bottles through a 60-spout filler, and here a liquid-soap lubricant drops onto the chain belt.

Drippings that fall to the floor are picked up with a rubber squeegee. And occasional mopping keeps the floor relatively clean. But the constant drip still presents a problem. Steady contact of the soap solution tends to mar the floor and cause some small pitting.

However, the affected area is considered to be inconsequential, and it is felt that the floor is as strong today as when it was installed.

Bottle-washing: Here, the floor must withstand constant wettings in addition to dirt brought in with the bottles. Then, too, grease and oil drippings from motorized fork trucks cause another floor hazard in this ground-level section. Still, the topping has shown no wear.

End (*Resume reading on page 70*)

Gaging

Here's how you can measure temperature of cased product without destroying a carton . . . Simple, fast, accurate method.

D. G. GUADAGNI and EUGENE F. JANSEN

Western Utilization Research & Development Division, USDA, Albany, Calif.

CONTROL OF QUALITY from packer to consumer is of vital importance to every food manufacturer.

And particularly so, if your product is frozen. For it is an established fact that frozen foods purchased at retail show many signs of severe abuse suffered during distribution.

But suppose you do decide to check product temperatures in the cases at various points along the line, how will you keep from damaging individual packages?

That was one of the objects of the time-temperature tolerance program at this laboratory. And it resulted in development of several methods that would permit frequent checks without puncturing individual packages.

Most satisfactory one comprised:

1. Open top of case.
2. Remove corner package.
3. Punch a hole through the case wall (from the inside) at the exact position desired.
4. Replace the package.
5. Close the top.
6. Insert the thermometer in the punctured hole for a distance of 3 in.

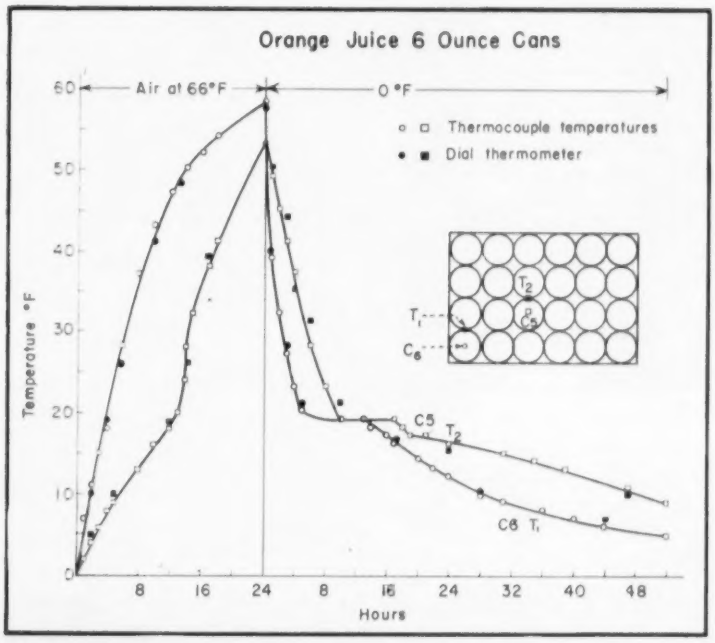
It was based on results of repeated tests that showed the temperature at center of corner package in a case remains constant for at least 10 min. after opening the case. This holds for cases that are removed from 10, 20, and 30F. storage to a 70F. room for temperature measurements.

Other Testing Procedures

An alternate method is as follows: With a sharp blade, cut out a small section of the case wall near the top

BEST THERMOMETER POSITIONS for various container styles: Stem is inserted 3 in. between top and bottom for products with air spaces (A); between sides of solid-pack items (B) and cans (C), and between top and bottom of metal ended cartons (D). Thermometers in top five cases were placed by opening case, removing carton, and punching a hole from the inside. Lower photo (D) shows simple alternate method. This involves cutting out a small section, placing thermometer, replacing section.

Frozen Food Temperature



TEMPERATURE CURVES show effect of package location in case. During warming (left), highest temperature is reached in topmost corner, lowest occurs in center. During cooling (right), corner package drops rapidly, while center one descends gradually. Note close agreement between thermocouples C_5 and C_6 (in center of cans) and dial thermometers T_1 and T_2 (at sides of cans).

corner package. Conventional razor knives used by retailers to cut cardboard cases are ideal for this purpose.

Resulting wall opening indicates exactly where first and second packages come together and, therefore, allows placement of the thermometer in the correct position. Next step is forcing the cut end of the cardboard against the packages and thermometer stem. After waiting about 5 min. the reading can be made.

Another technique is to put a marker on the outside of the case where the top corner package should lie. However, dimensions of the same types of cases and packages are not always exactly equal, and such a marker would undoubtedly result in puncturing of some packages.

If punctured packages are not of major concern, a marker or dot would probably suffice. And extra safeguarding of the packages could be obtained by careful probing for the space between packages, after the initial puncturing of the case wall.

The dots would be printed at points where each corner and adjacent package come together. This would insure that the measurement could be made on the exposed corner, irrespective of case orientation in the stack.

How Temperatures Were Checked

Sixteen different types of commercially cased frozen foods were tested under various temperature conditions and at different positions in the case.

Temperatures were taken with a simple metal dial-type thermometer. This is preferred because it is unbreakable, has a rapid reaction time, and is easy to read. At least 3-in. of the thermometer stem was inserted between the package whose temperature was desired and the adjacent one.

A recording potentiometer equipped with 30-gage copper constantan thermocouples provided the control. The thermocouples were inserted in the centers of the packages.

To determine reliability of thermometer readings under different temperature conditions, full cases of various products were warmed in air at 66F. for 24 hrs., then cooled in a 0F. room. Periodic temperature measurements, made at various positions in the case, showed good agreement between potentiometer and thermometer readings.

When using a dial-type thermometer you should have the sensing portion of the stem (last 3 in.) pressed firmly against the package to be checked. After the thermometer is properly placed, it is important to allow time for temperature equilibrium (when needle on the dial comes to rest), otherwise readings will be erroneous. For the metal thermometers used in these tests 5-min. were required to obtain equilibrium.

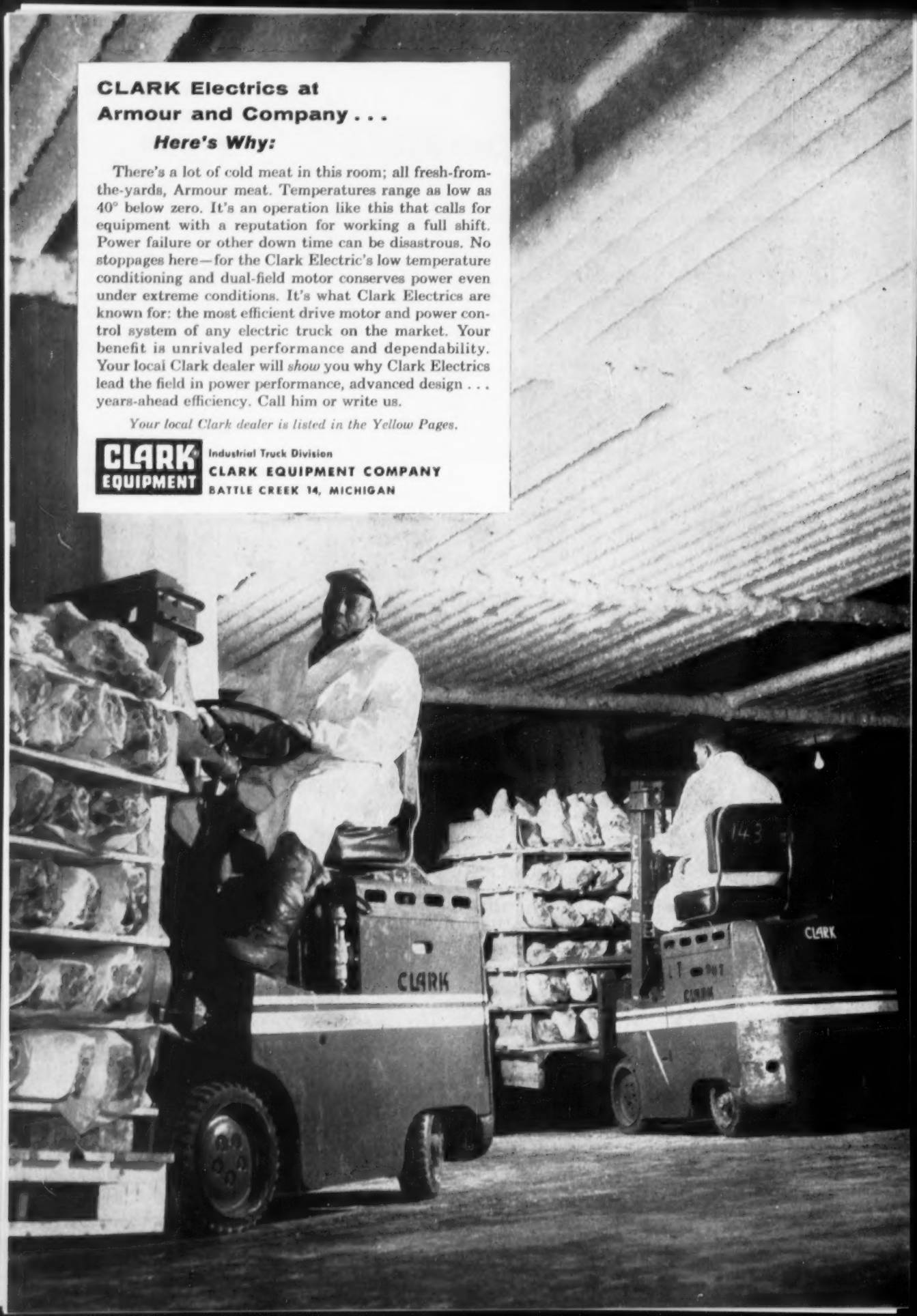
Any thermometer may be tested for reaction time by inserting it into a product at known constant temperature and observing how long it takes to reach the known value.

Typical examples of temperatures in frozen concentrated orange juice during warming and cooling are shown in the accompanying chart. As would be expected during a warming cycle, the highest temperature is reached in the topmost corner package, and the lowest occurs in the center package.

During cooling the corner package rapidly drops in temperature, while the center one takes a more gradual descent and eventually becomes the warmest package in the case. Under certain conditions, then, it is possible for the center package to be as much as 15F. warmer than the corner one.

For cases that have just been placed under refrigeration, a comparison of center and top corner temperatures will indicate the previous temperature exposure.

For example, if the center is 10 to 15 deg. higher than the corner it is fairly certain that the case of frozen



CLARK Electrics at Armour and Company . . .

Here's Why:

There's a lot of cold meat in this room; all fresh-from-the-yards, Armour meat. Temperatures range as low as 40° below zero. It's an operation like this that calls for equipment with a reputation for working a full shift. Power failure or other down time can be disastrous. No stoppages here—for the Clark Electric's low temperature conditioning and dual-field motor conserves power even under extreme conditions. It's what Clark Electrics are known for: the most efficient drive motor and power control system of any electric truck on the market. Your benefit is unrivaled performance and dependability. Your local Clark dealer will *show* you why Clark Electrics lead the field in power performance, advanced design . . . years-ahead efficiency. Call him or write us.

Your local Clark dealer is listed in the Yellow Pages.

CLARK EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
BATTLE CREEK 14, MICHIGAN

food was exposed to a high temperature. But, if both temperatures are about 0F. one may assume that the case had been refrigerated long enough to reach equilibrium.

Air vs. Product Temperature

The temperature of the air adjacent to the corner package does not necessarily indicate product temperature. This is especially true when the package temperature rises above the freezing point of the product. Therefore, it is essential that the thermometer stem be placed in direct contact with the package itself, rather than in the air space surrounding it.

However, for product temperatures below the freezing point, minor differences were found between air and product. And air and product temperatures in the center of the case were very similar throughout the whole range.

Measurements on the inside or outside wall of the case do not accurately reflect the product temperature of any container in the case. It is necessary to place the thermometer adjacent to and in direct contact with the package whose temperature is desired. The thermometer stem should never be placed in direct contact with the inside wall of the case of frozen product.

Some products require different thermometer positions from others in order to obtain the best temperature approximation.

For solid pack products containing liquid media, such as sugared or syruped fruits and canned soups, thermometer position is not important, provided the stem is in contact with the package. All vegetables and fish sticks gave more accurate results when the thermometer was placed between the package edges, while pies, shrimp, and potato products gave better results when the thermometer was placed between top and bottom of adjacent packages. Thus it appears that the packages with air spaces around their edges should be measured between tops and bottoms.

Acknowledgment: The authors wish to thank the following members of the Scientific Advisory Council of Refrigeration Research Foundation for help in developing the above method: H. C. Diehl, RRF., H. J. Humphrey, Birds Eye Div., Gen. Foods Corp.; H. K. Schauffler, Nat. Wholesale Frozen Food Distributors Assn., and L. S. Martin, National Assn. Frozen Food Packers.

IN ONE PASS these Titan Superjectors separate animal fats, wash water, and solids.

Does sludge slow down your liquid-solid separations?

Look then to Pfaudler and the Titan Superjector

This unique new centrifuge can handle slurries up to 35% solids by volume for a full month without need for cleanout.

All sludge is discharged periodically and automatically through a series of hydrostatically controlled slots.

The Titan Superjector concentrates solids up to 40% by volume, clarifies liquids down to 0.00% solids, and can discharge mixed solids particles up to 1/8" diameter with specific gravities up to 1.60.

Such performance makes it ideal for separating fats and oils, fruit juices, hot wort, dairy products, grains, and for wash water treatment.

Power consumption, by the way, is 50% less than with conventional units since there is no braking effect from the continuous discharge of solids.

Check the coupon for more information on the Titan Superjector and other integrated process equipment from Pfaudler.

THE PFAUDLER CO., Dept. FE-77, Rochester 3, N.Y.

Please send bulletins on the ☐ Titan Superjector and this other Pfaudler Food Processing Equipment: ☐ Heat Exchangers ☐ Tanks—Mixing and Storage ☐ Conical Dryer-Blenders ☐ Fillers—Rotary Piston Type ☐ Evaporators—Film Type

Name_____ Title_____

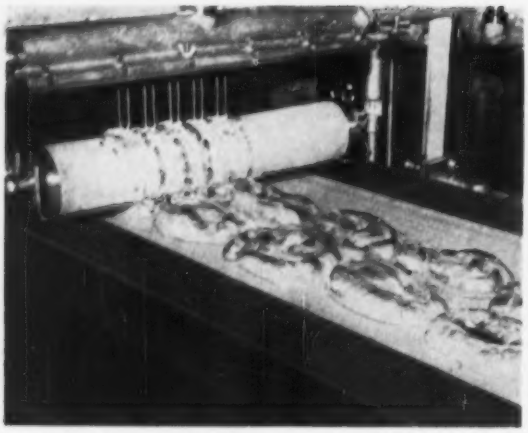
Company_____

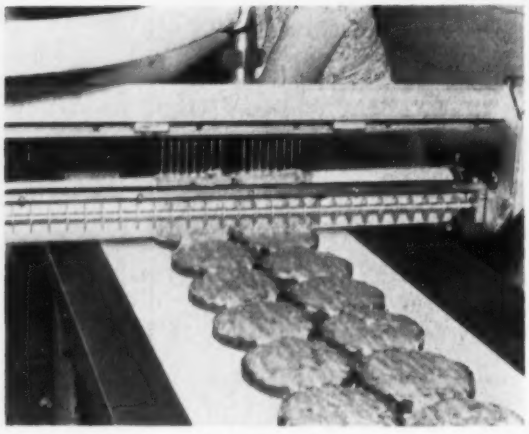
Address_____

City_____ Zone____ State_____

Closeups of 'roll on' . . .

. . . and 'print on'





MODERN ICING MACHINES are equipped for high-speed continuous production. (Left) Pecan rolls are seen being "roller iced" to give a hand-finished appearance. (Right) Here, cakes are being iced with a special 24-in. head that employs a matching print roller.

For top quality, highest product appeal, use these—

LATEST ICING TECHNIQUES

Here's new sharp focus on the "part that sells the product": Formulations for icings that stand up under most rigorous handling . . . Machines that assure precision applications, stress sanitary safeguards

N. H. NASH
Technical Director, American Breddo Corp., New York City

EVERY 'UP-FRONT' BAKER has the answer to the question "Why the accent on icings?"

The truth is that big strides have recently been made in improving icing formulation and application—key factors in today's high acceptability of iced baked goods.

Naturally, attractive visual packaging is powerful buying stimulant for Mrs. Housewife.

However, the all-important Step 2 is her judgment of the package contents by the icing—the only portion of the goods she can see at the time of purchase.

Thus, the icing must sell the entire product.

How good a selling job it does depends upon its ability to withstand many quality hazards on the long path from processor to consumer. We will discuss the flat icings—the types so important in production of sweet rolls, buns, and Danish.

These products generally are stored immediately after processing, then shipped to distribution depots, again stored, then trucked to retailers. In the store, products are held on display racks under varying conditions. After purchase, they may be kept for several hours (at room temperature) up to several weeks (in a refrigerator or freezer) until finally consumed.

And throughout this entire period, quality characteristics—flavor color, texture, and stability—must be preserved.

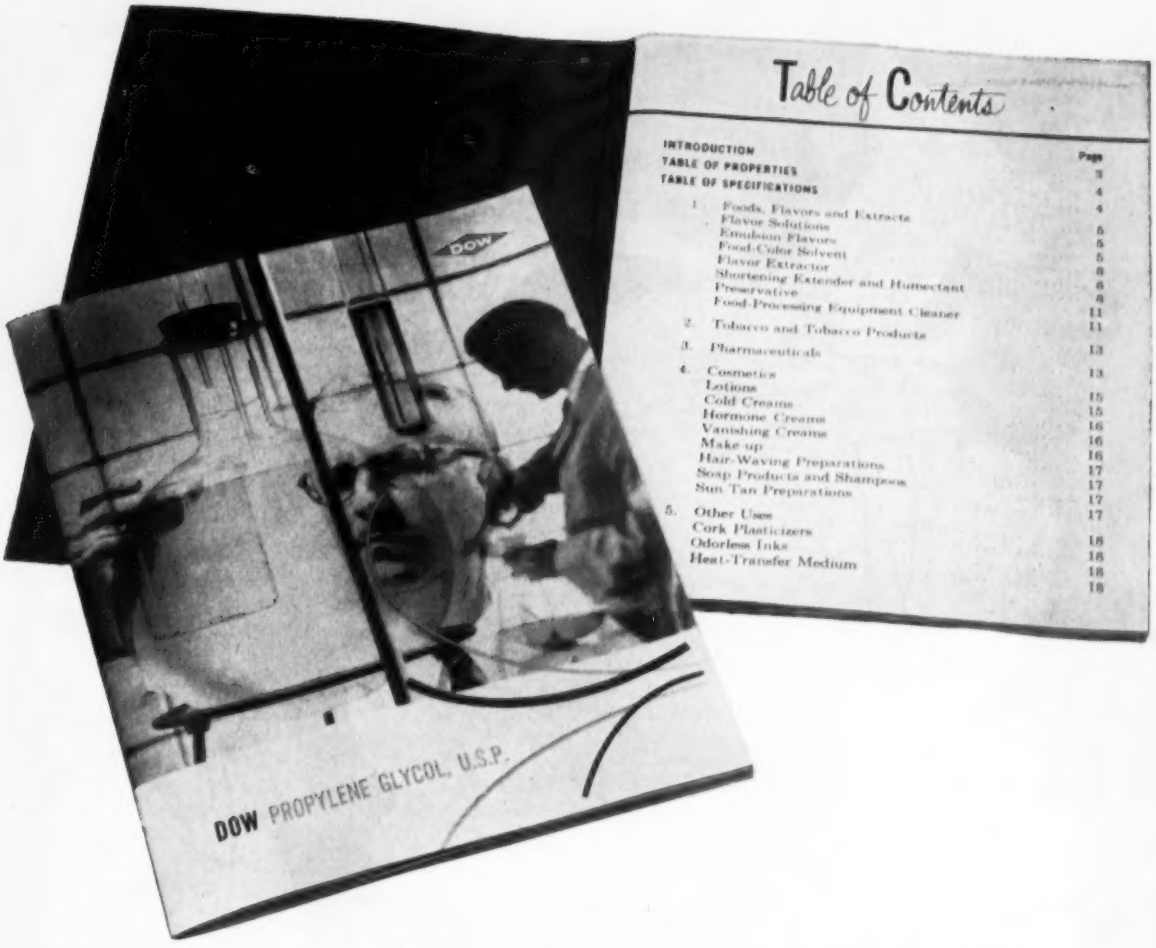
What can the processor do to maintain these essential properties? First, he can pay special attention to his icing formulations, anticipating difficulties with appropriate formula changes. And he can avail himself of latest icing equipment for further quality control.

Let us now consider some common stability problems, and methods by which they can be solved:

Icings Melt, Peel, Crack

Icings are coatings, or toppings, composed of a sugar-water system that may be modified by addition of fats, milk and milk derivatives, stabilizers, aerating agents, salt, flavor, and color.

Flat icings are applied to sweet rolls, which are then hermetically



SHORT ROUTE TO STRAIGHT ANSWERS

NEW Dow booklet on propylene glycol, U.S.P., covers uses, specifications, properties in 32 fact-packed pages

Here's helpful data on propylene glycol, U.S.P.—a material that offers this combination of properties: odorless, practically tasteless, low in volatility; serves as an emulsifier, solvent, wetting agent, humectant, plasticizer, preservative. For your free copy of new booklet, "Propylene Glycol, U.S.P.", mail coupon today.

THE DOW CHEMICAL COMPANY
Midland, Michigan, Dept. GD-875G-1

Please send
new booklet on
propylene glycol, U.S.P.

Name_____

Firm_____

Street_____

City_____ Zone_____ State_____

YOU CAN DEPEND ON DOW

For more data, circle this page number on card at back →

Carrier CARRIER CORPORATION, SYRACUSE, NEW YORK. OFFICES IN PRINCIPAL CITIES.

sealed in cellophane. Many difficulties are encountered in manufacture and distribution of these items. An icing may melt and disappear in hot, humid weather. It may also crack, peel, or develop a dull appearance.

Problems of stability[1, 2, 3] in flat icings entail solubility of sugar and movement of moisture in the iced sweet-roll package.

It has been pointed out that, at 90F., a saturated sugar solution will hold 69.5% of sugar. In an icing with 85 parts sugar to 15 parts water, only 34 parts of sugar are in solution. the other 51 parts are crystallized and never go into solution if the water is not heated above 90F.

As icing temperature increases (on a hot summer day, for example), more sugar goes into solution. The icing melts and may stick to the wrapper.

Stabilizers that have an affinity for water are used to prevent the sugar from dissolving. Heat and moisture released by the baked product will further abet the change of crystalline sugar into soluble sugar or syrup.

These conditions may be avoided or remedied by using a "boiling" method in preparing the icing, by working with a minimum of water, by employing cool, well-baked sweet rolls, and by adding stabilizers to bind free water.

How Stabilizers Are Used

Icing stabilizers, or conditioners, generally are a blend of vegetable or synthetic hydrocolloids, processed or raw starches, protein and protein derivatives, and hard or plastic fats. They are scientifically combined to provide water-binding properties, plasticity, opaqueness, whiteness, and other physio-chemical properties in water that curb the above-mentioned icing defects.

In preparing the icing, 10-15 parts of stabilizer are mixed with about 20 to 30 parts of granulated sugar and about 20 parts of water. This mixture is brought to a rolling boil, then added to 100 parts of icing sugar. Since this icing is applied hot (120-140F.), there is rapid evaporation of moisture from the surface, and the iced baked product may be wrapped in less than 60 sec.—a significant factor in today's high-speed production methods.

Importance of using a minimum of water cannot be over-emphasized—because addition of an extra pound of water in 150 lb. of finished icing may be the difference between a good and mediocre icing.

The syrup should be prepared in a stainless-steel, steam-jacketed kettle. This syrup is added in increments to the powdered sugar in an upright bakery mixer, with special care to avoid lumps, which may later result in a spotty icing.

Modern Icing Units Up Quality

In his quest for higher-quality baked goods, the processor has a valuable tool in modern icing machines and depositors, which have been perfected for precise control of the amount of icing, applied. Latest models have these eight features:

1. Sanitary construction (stainless steel, aluminum, etc.), permitting rapid disassembly for thorough cleaning.
2. Low-opening hoppers, enabling easy filling while icer is operating.
3. Electrically heated and thermostatically controlled water jackets, assuring constant maintenance of icing temperature.
4. A hydraulic mechanism that easily adjusts height of icing nozzle to required level.
5. A variable-speed pump with bypass valve, giving very close control of icing flow.
6. Strainers built into the hopper, thus avoiding lumps, and preventing foreign objects from damaging the pump.
7. Standardized heads that deposit sheets or ribbons of any width up to 18 in.
8. Interchangeable slide-in dies that facilitate fast and easy changeover from sheet to ribbon icing, or to a roller-type frosting (a simulated hand type preferred in many localities).

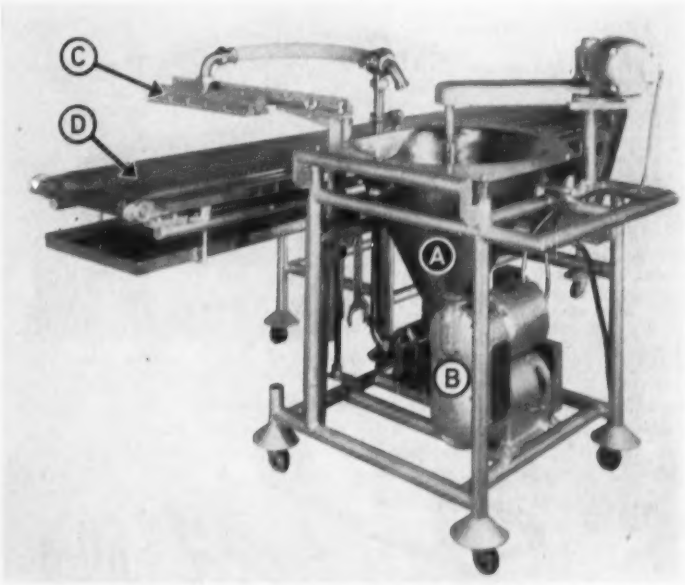
Such units, which may deliver from 50 to 500 lb. per hr., are adjustable for changes in conveyor speed and product size. Variations in amount of icing required for different baked goods are so great that this versatility is essential.

Sweet goods iced with a boiled-type, well-balanced icing may be wrapped in a continuous operation, which eliminates the need for putting them on racks for cooling. These products are placed in cartons, ready for immediate distribution.

However, temperature in a trailer may rise to 120F., with very high relative humidity. In addition, icings must withstand the severities of shaking, rubbing, and other difficulties encountered in a long truck ride over rough roads.

Adjusting the Formula

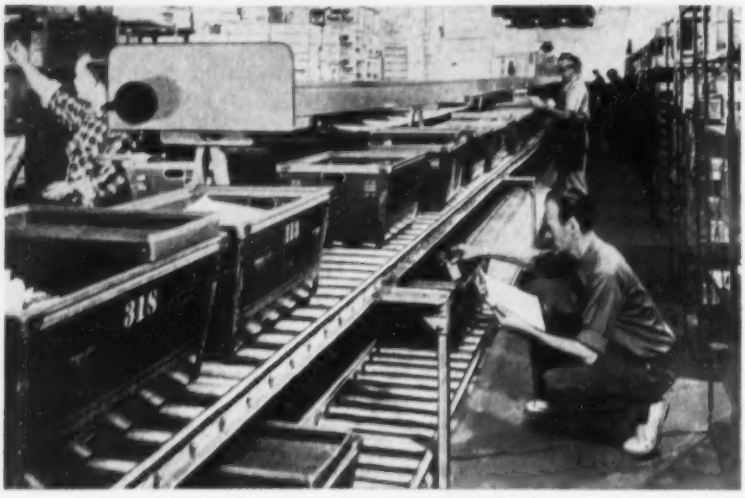
Changes in formula often are necessary to accommodate differ-



SANITARY CONSTRUCTION is stressed in new icing units, which feature: Jacketed, open hopper (A) at convenient filling height; variable-speed motor (B); adjustable icing head (C); and conveyor (D).

Ask Standard

how to cut costs with conveyors



Although over 19,000 items are stocked, conveyors permit fast and efficient assembly, checking and packing — orders ride safely in durable, lightweight tote boxes.

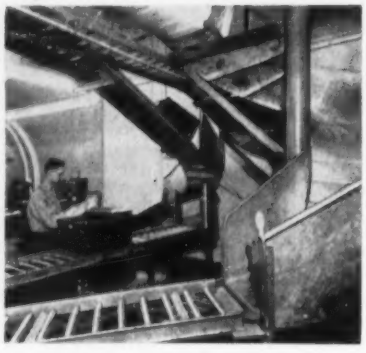
Milwaukee wholesale drug firm

ups order-filling 50% with 3-floor conveyor system

WITH conveyors, The F. Dohmen Company, Milwaukee, Wisconsin, designed a system which has permitted them to fill upwards of 50% more orders per day . . . reduce to a minimum, excessive overtime costs . . . reduce errors, delays and merchandise damage. Standard belt and roller conveyors connect every department in the firm's three-story warehouse.

This installation is typical of what Standard can do to solve material handling problems. Standard designs and builds permanent and portable systems and units, using roller, belt, slat, chain, pushbar or sectional conveyors — power or gravity; also spiral chutes and pneumatic tube systems.

For complete facts, consult STANDARD CONVEYOR COMPANY, General Office: North St. Paul 9, Minnesota. Sales and Service in Principal Cities.



Floor-to-floor route of conveyor system assures minimum wasted motion by employees. Above, "close-out" checker makes final inspection of orders.

For details on Standard Conveyors of all types, contact the Standard representative listed in your classified phone book or write direct. Ask for Bulletin D-7.

Standard 50 years of conveyor experience

GRAVITY & POWER CONVEYORS

ences in baked products, variations in production procedure, type of icing desired, and various storage conditions.

In the case of Danish or roll-in type of baked product, the surface contains a high percentage of fat. Thus, there is less exchange of moisture between product and icing in the hermetically sealed package. This icing may dry out or crack more readily than one applied to ordinary sweet buns.

Here, added shortening or a humectant (corn syrup or invert syrup) keeps the icing soft. Where it is not feasible to wrap within 60 sec., it may be necessary to cut the amount of sugar in the syrup stage. This will lower the proportion of soluble sugar and prevent surface drying before wrapping.

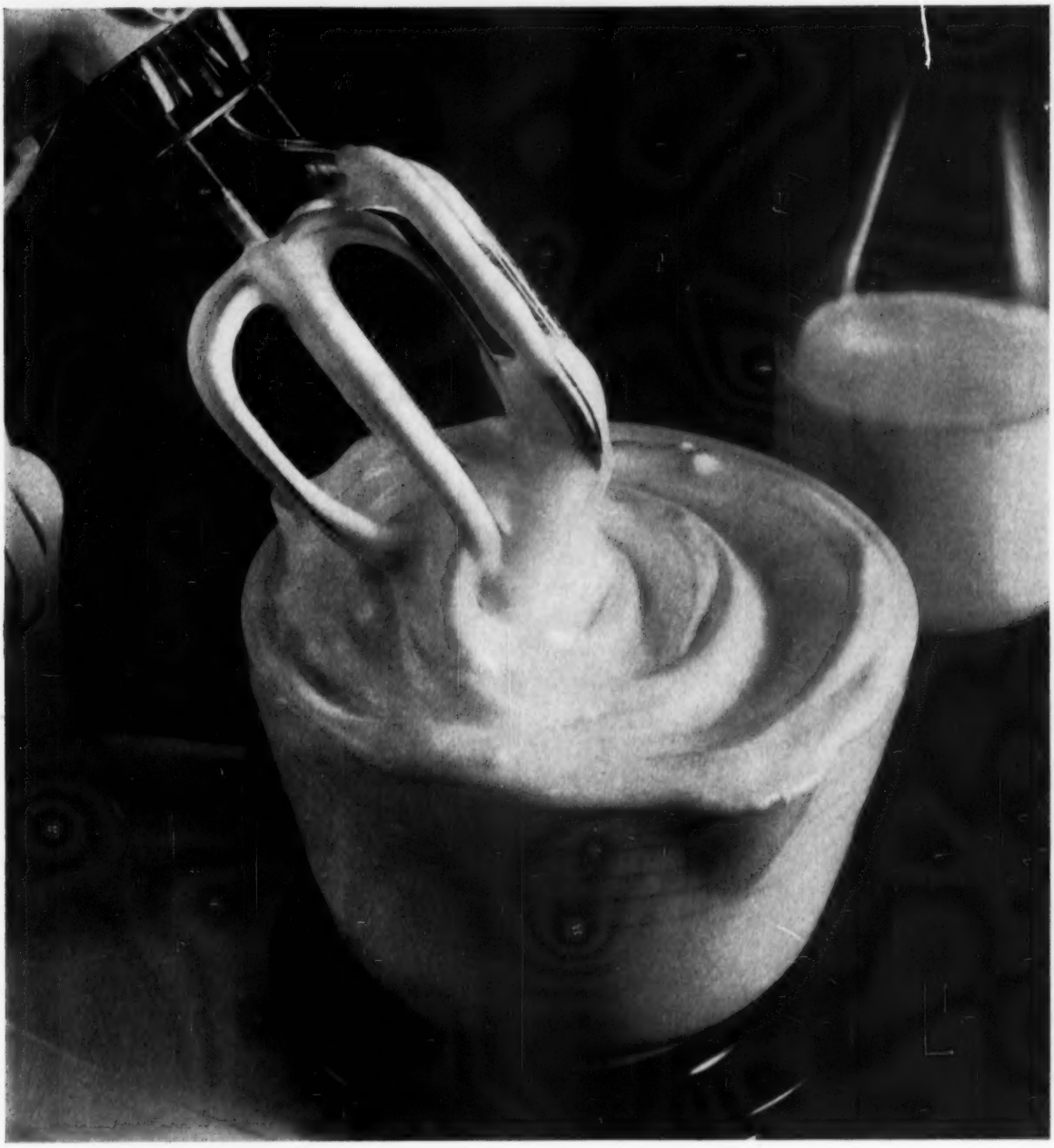
Strip or ribbon-type icings often dry out faster than a sheet icing because of the greater surface available for evaporation. This condition may also require adding of shortening or syrup, or reducing the amount of sugar in the syrup.

However, these changes should be carefully controlled, for extremes will result in a melted icing.

References

1. Lipman, H. J., "Icings," *Bakers Digest*, p. 111-115, Oct. 1955.
2. Mickevic, M., Alikonis, J., and Glabe, E., "Mechanism of Icing Stability," *Bakers Digest*, p. 34-36, 49, Feb. 1956.
3. Nash, N. H., *Functional Aspects of Hydrocolloids in Controlling Crystal Structure in Foods.* Paper delivered at meeting of American Chemical Society, 1956.

"In test marketing this new item, we're staying on the safe side—by including in each package this list of the better restaurants in the area."



This is *whipped* homogenized milk

You do it by incorporating a bit of *Myverol® Distilled Monoglycerides* with the milk and beating to a nice, dry, whipped dairy product. It works with other milk products, too. Anyone interested in the possibilities of creating dairy- or vegetable-based toppings with Myverol Distilled Monoglycerides should write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York, Chicago, and Memphis • W. M. Gillies, Inc., Los Angeles, Portland, and San Francisco • Charles Albert Smith Limited, Montreal and Toronto.

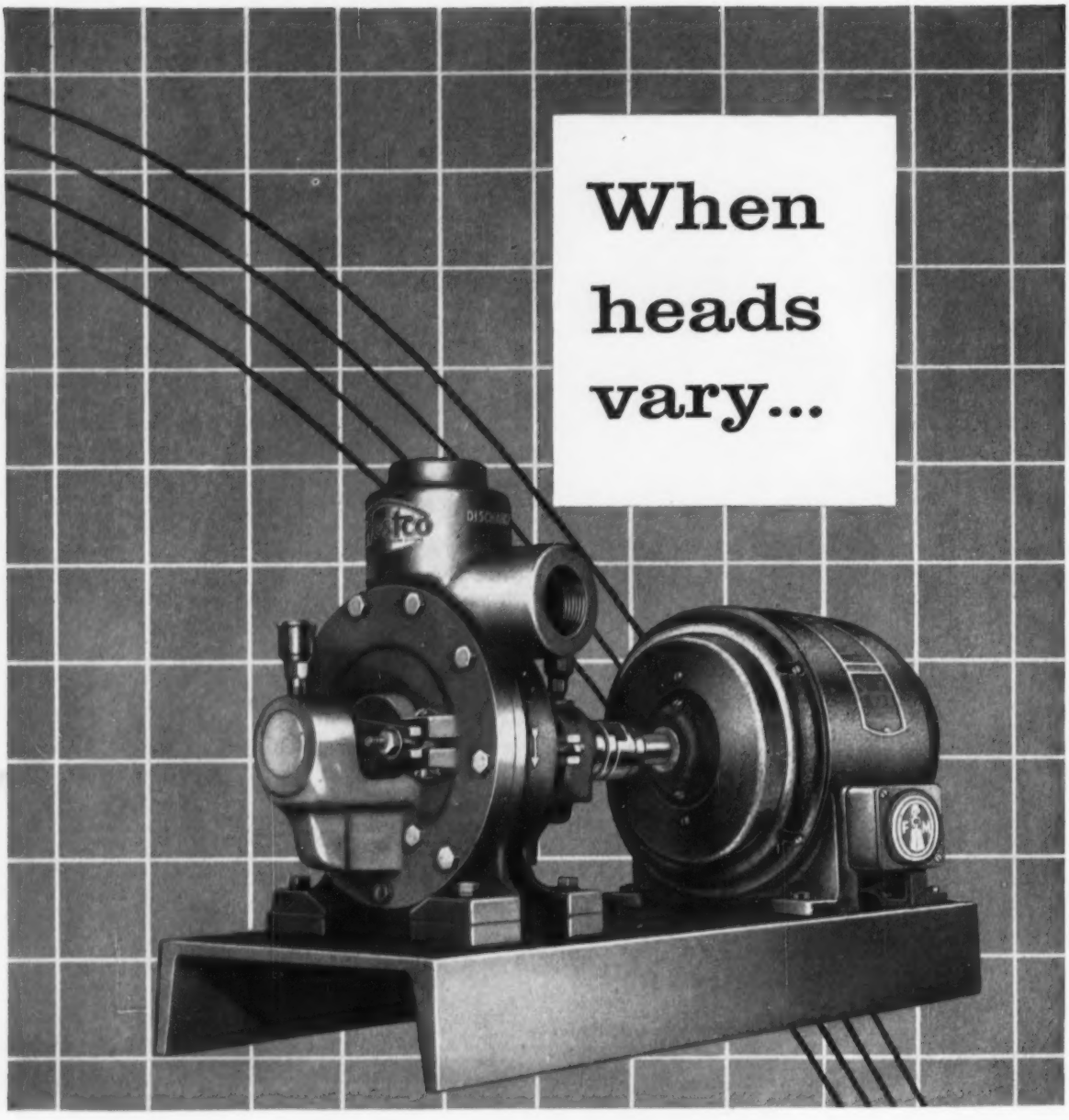
distillers of monoglycerides made from natural fats and oils

Also . . . vitamins A and E . . . some 3600 Eastman Organic Chemicals for science and industry

DPi

Distillation Products Industries *is a division of* **Eastman Kodak Company**

For more data, circle this page number on card at back →



Install a Fairbanks-Morse Westco peripheral pump . . . and make sure of efficiency with little or no loss of capacity!

How? Through original F-M Westco design—these pumps deliver approximately the same capacity when discharging against high pressure or low pressure—and all at 1750 rpm.! Another important point: by featuring a multi-vaned impeller, these Westco peripheral pumps deliver multi-stage performance from a single-stage pump.

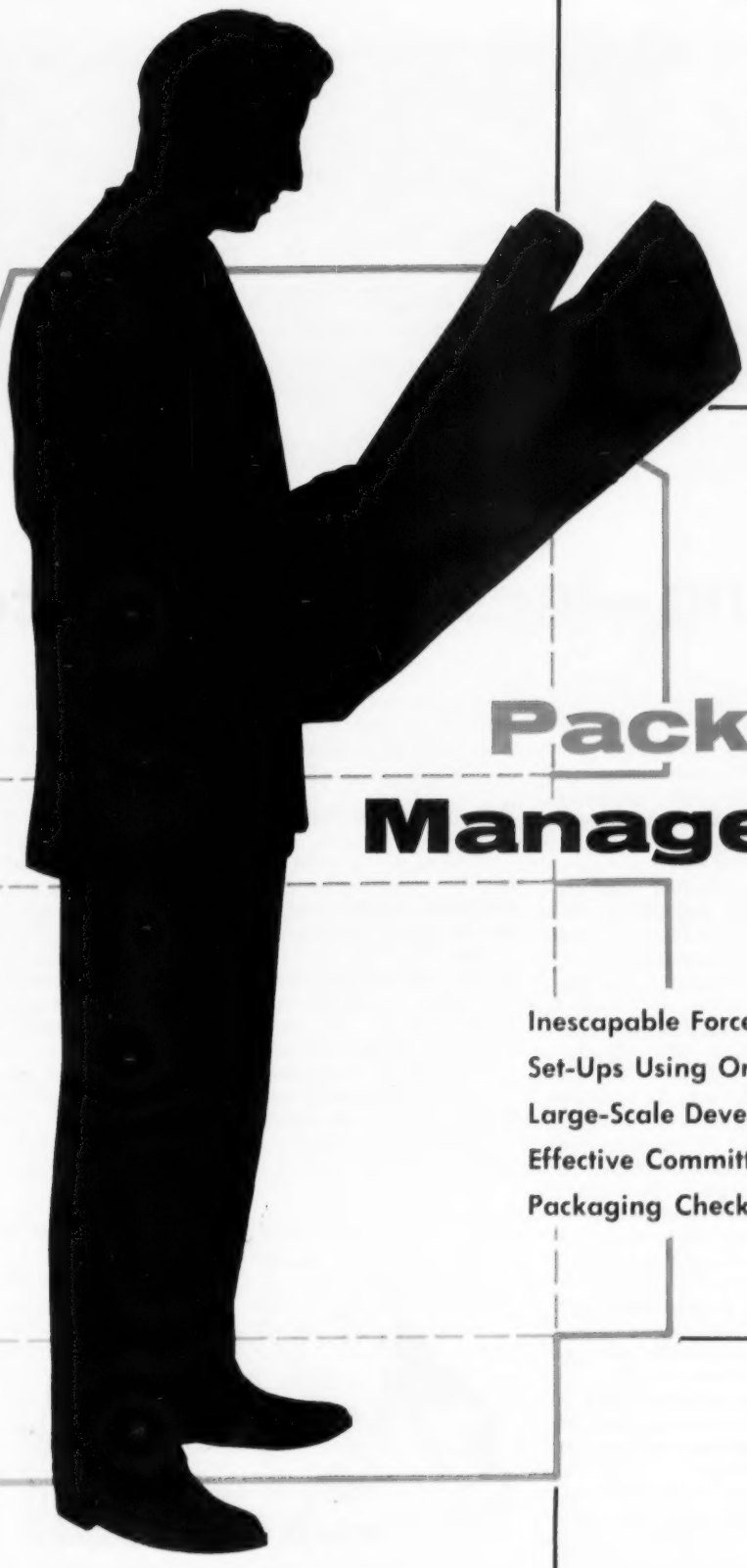
You'll find Westco peripheral pumps ideal as integral parts of machines, units or systems . . . such as circulating hot water, ice water or brine . . . or for service on clear water, sump, solvents or chemical fluids, feeding filters or boilers, or as booster pumps. Capacities to 200 gpm., heads to 600 feet. For complete information and assistance contact your F-M Pump Dealer, or write today to Fairbanks, Morse & Co., Dept. FE-7, 600 South Michigan Avenue, Chicago 5, Illinois.

FAIRBANKS-MORSE
a name worth remembering when you want the BEST

PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MOWERS • MAGNETOS

← For more data, circle this page number on card at back

FE special report



Packaging Management

Inescapable Force in Executive Planning

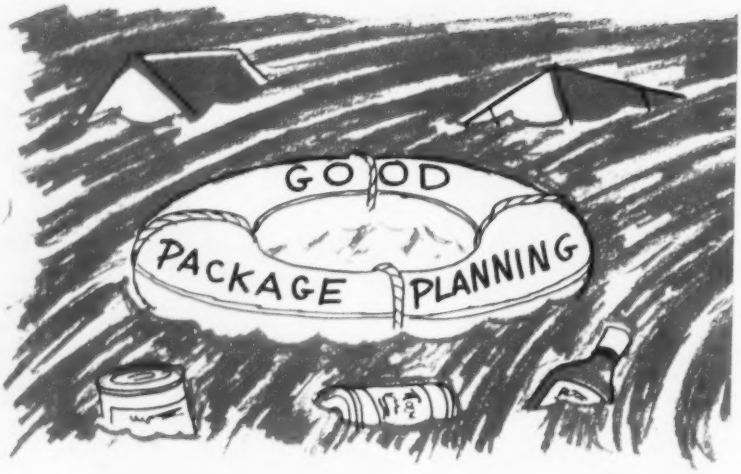
Set-Ups Using One-Man Control

Large-Scale Development Programs

Effective Committee Systems

Packaging Check List

Today's rising costs and fierce competitive pressure have made sound management a sink or swim proposition. And regardless of your organizational structure, all top personnel have a stake in your packaging program. Here's how nine successful companies mobilize marketing, design, engineering, research, fiscal, and production men to grapple with . . .



Packaging—Inescapable Force

ROBERT J. KELSEY

Assistant Editor, "Food Engineering"

MY PACKAGE IS ALL RIGHT, why change it? This question—once commonly heard in any processing plant—is as rare today as the executive who doesn't spend most of his waking hours planning his next step in the packaging whirlpool of high cost and competitive pressure that now engulfs the food industry.

What does he see when he surveys the field?

- ▶A welter of new materials—all clamoring for attention. And even old, standby containers, tricked out in a variety of new shapes and features to suit the needs of this convenience era.
- ▶Industrial designing, slowly superseding the suppliers as the source of eye-catching containers that will click on crowded supermarket shelves.
- ▶Faster packaging machines that have to be carefully evaluated for their net savings potential.
- ▶Motivation and marketing studies to minimize the risks involved in floating untried packaging ideas.
- ▶Research facts that point up compatability—and incompatability—between product and container.
- ▶Cost control, which looms ever larger because of the expense involved in production and marketing of a new package—or even in the redesign of an old one.

Can one man keep all of these threads untangled? Not alone. In each of the nine food companies surveyed for this report (all leaders in packaging management), almost every department is concerned in some way with the functional aspects of packaging—marketing, design, engineering and production—regardless of whether or not the company management operates on a committee or authoritarian basis.

Details on the structure of these individual companies, and case histories of their operations come later. First let's see how executives with widely varying backgrounds fit into the overall picture, what advantages are present in the different operational structures, what can be done to minimize the disadvantages, and what's in it at all for the small, food plant owner.

Who Claims a Stake in Packaging?

Because of the dollar expenditures today—the food industry spent better than $6-billion last year on packaging materials alone—top management has stepped into the picture as never before.

Sales, marketing and advertising managers have a greatly increased interest, because of the absolute necessity for a package with strong convenience and impact appeal. And they supervise the marketing tests that seek to pre-determine packaging success.

Research directors evaluate the protective advantages of new materials, and frequently change either product or package for greater compatability.

Manufacturing, operations, and engineering personnel demand advance knowledge of company developments

. . . Fiscal officers infiltrate program

In the final cold climax, it's "Reach It—or go Down"

In Executive Planning

so that they can select machines and dove-tail production lines and schedules for greater economy.

Purchasing agents want detailed container specifications—and in return, serve as the company's eyes and ears for new, supplier developments.

QC men are generally responsible for in-plant inspection of packaging materials to make sure they meet rigid specs. And they also perform important statistical control on package fill and weight.

Finally, accounting and fiscal officers infiltrate the entire program—plotting and refining figures on probable costs, pricing, and profit.

However, the classic question is, "How does top management organize all this varied activity for most efficient results?"

How are all these seemingly different phases coordinated? How are lines of communication set up so everyone knows what everyone else is doing? How are conflicts of authority resolved? How are the various steps planned so that each developmental stage takes place in its proper order?

Committee vs. One-Man Operation

There are two basic systems in use today that attempt to resolve these questions.

▶ The first is the committee organization. Briefly, top management representatives of the interested departments sit down at a table, kick around the various ideas for solving a packaging problem, return to their departments and work out their specific assignments, then report back for further discussion until the problem is solved.

▶ The second system is the one-man set up, where a single expert exercises authoritarian control over the whole problem of package evolution.

Both systems have advantages and disadvantages.

On the credit side for the committee system is the fact that it concentrates all of the necessary experts needed to solve a problem in one room.

In the give and take discussion that results from such a merger, "brainstorming" can transpire—leading to sparkling new ideas on all facets of packaging control.

And since everyone concerned with packaging is present, all problems, solutions, and details are communicated instantly to the responsible executives. This results in a drastic cut on the amount of paper work needed to keep everyone fully informed on a project.

But this hypothetical set-up has some disadvantages too.

It is always hard to get a group of high-level executives together at the same time, particularly in a multi-plant company that may be scattered over the entire country.

Complaints have also been heard that the free give and take discussion frequently breaks down into either an argument or a bull session—with no concrete conclusions being reached in either case.

Because of the number of participants, the true objective can often be obscured by a plethora of ideas and suggestions that may or may not be relevant to the major issue. Good ideas can be lost, too, in the pressure of departmental routine if efficient communications are lacking.

Without strong direction, it is easy for committee members to shirk responsibility, and claim that an assigned project is really under the jurisdiction of another department.

If only top management is represented at these meetings, working knowledge may not be tapped. But if lower-level executives carry the ball, they are not cognizant of top management thinking.

In contrast to these facts, the one-man control has its own set of features:

It does short-cut argument and discussion—a matter of considerable importance in any crash program.

Since one person coordinates things, he can avoid duplication of effort.

And he can contact either high or low-level execu-

. . . It takes cognizance to carry it

tives for broad policy thinking or detailed knowledge of a specific operation.

Furthermore, he is unavoidably in charge of the whole packaging program—a matter of great satisfaction in organizations that demand rigid responsibility.

But, this lone person also has problems.

First and foremost, it is virtually impossible today for any one man to possess the variety of detailed knowledge to plan and execute a successful package.

Furthermore, his independent action can antagonize other company departments that have a real stake in the overall packaging function, and can undermine the authority of product managers.

And it is undeniable that one-man management leads eventually to a sterility of new ideas.

How to Improve Committees

With this complexity of conflicting pros and cons, what have companies done to resolve the dilemma? Simply, they have combined the better features of each organization. Today, in companies with good packaging management, there is a great similarity between the two systems. Take a committee organization for example:

Invariably, there is a high-level executive who acts as chairman. He provides strong leadership, and strict discipline in the assignment of tasks to the various department representatives.

Main sparkplug, however, for these working groups is invariably the secretary—who generally draws up

. . . The secretary is the sparkplug

the agenda for the committee meeting, follows up the delegation of tasks to each department, and coordinates the solution of each packaging project. His careful minutes and follow-up prevent ideas from being lost, and time from being wasted by duplicating or mis-timing efforts.

Now, committees generally contain both staff and line executives for more rounded discussion of company aims. In addition, operating- and top-management aims are brought into close alignment by increased intra-departmental coordination—in both up and down directions.

Increased One-Man Control

In spite of these improvements, however, more and more companies are switching to a one-man packaging authority. But not without safeguards to minimize the previously stated drawbacks.

To overcome his technical deficiencies, strong communications lines are established with all the other departments. In some companies, the packaging man may do the actual work, drawing technical assistance from other departments—or he may only coordinate the work of various departments.

Many companies require the final draft of packaging changes to be approved by all department

. . . It's the product manager's ticklish choice

heads. Product managers generally put the final stamp of approval on package and product.

This dispels any antagonism that the other departments may feel toward the packaging man, assures all interested executives a measure of control over packaging, slightly reduces the burden of responsibility on the packaging specialist, and maintains the authority of the product manager.

Because the packaging manager knows that his work must be approved by marketing, research, production, and engineering men, he strives to get their help and reactions at initial stages of development, thus making final approval a mere routine.

The inter-departmental liaison further stimulates generation of fresh ideas. Sometimes even committee meetings are held at various checkpoints during the development work—a further opportunity for "brainstorm" discussion.

A point which cannot be emphasized too much, however, is that one-man control today does not mean autocratic management. The packaging manager is essentially a coordinator.

This fact—added to the trend toward increased com-

pany size—points up the need for good lines of communication between the manager and his "specialists".

What Kind of Man for the Job?

Since it is obvious that both systems of management now hinge on the ability and resourcefulness of one man—be he called a packaging manager or committee secretary—let's take a look at his qualifications, as set forth by the top management of the various companies surveyed for this report:

Number one requisite is a huge slice of tact and a large helping of administrative ability. This must be accompanied by boundless enthusiasm for the importance of packaging.

Most company officials prefer a man with a broad perspective—not one with a highly technical background. But they insist that he must be meticulous in his attention to details.

A good general knowledge of packaging materials, cost analysis, graphics, and marketing is considered highly desirable—though not absolutely essential.

At least one company believes that industrial engineering makes an excellent background for its packaging manager.

All company officials are unanimous in the opinion that departmental background plays a lesser role in the selection of a packaging man than does the individual personality of the candidate. However, it is notable that most of the packaging men surveyed were drawn from the marketing or purchasing departments (with some notable exceptions, too!).

Part of the reason for this is no doubt the broader activity inherent in these company divisions—as opposed to a more rigid program in research and engineering.

But there are other advantages too. Purchasing agents are in an optimum position to hear of new developments by suppliers. And even the largest companies lean

. . . Many are snatched from Purchasing

heavily on their suppliers for ideas and help in packaging problems.

Sales and advertising men are skilled in the display and design functions of the food package, upon which the sale of the product ultimately rests.

However, where the packaging function is linked strongly to other developmental programs (product, production, operations, etc.), it may be more desirable to locate the authority in the enginering, production, operations, or research departments.

In truth, it is unanimously agreed upon by management experts that there is no one formula, type of person, or departmental set-up that will fit all companies. Each packaging program must be tailored to the particular philosophy of management espoused by a company, and must be adapted to the personnel available in the organization.

How About Small Operators?

This raises a point as to what the small company can do to better its packaging. Discussions of integrated programs, departments, and staff and line management seemingly mean very little to an organization run by one to three men. Nevertheless, the basic ideas involved do apply.

It is equally important for the small company to keep abreast of packaging development, and keep its products competitively up-to-date with those of the giants. In some ways it's more important. The large

. . . The results can be amazing

companies spend millions of dollars in consumer advertising. For them the package is a small—though vital—last link in this merchandising program.

But for the little fellow, the product package may be the *only* advertising effort. If he is to survive at all in today's savage supermarket battleground, it had better be a good one.

What to do? First, appoint one man to keep tabs on industry developments and coordinate company efforts toward improved packaging. If you own a one-product company, obviously this man can shoulder other responsibilities as well. But, if you turn out a multi-product line, a full-time coordinator for your packaging program and forecasting is not only an essential business expense, but may well determine whether or not you stay in business at all in the foreseeable future.

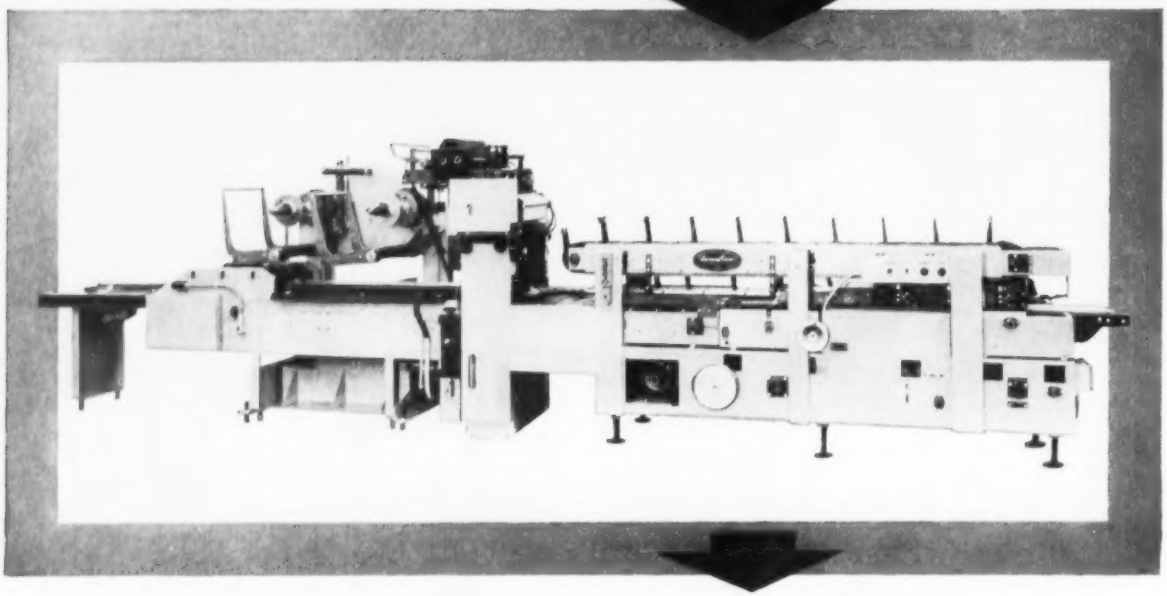
Some packers feel that packaging demands an expensive research staff. It doesn't. There is a tremendous body of technical knowledge available—for the asking—from packaging material suppliers, equipment manufacturers, and trade organizations, packaging shows, and magazines. All your coordinator has to do is tap it.

Graphic designs needn't be developed in your own house either. Many suppliers have excellent design staffs, and supply art work free, as a service.

Or it may even pay you to retain an industrial packaging designer to help you with your problems. There are some excellent ones that are not too expensive.

Above all, stimulate interest in packaging among your sales, production, and QC men. Hold idea meetings, and draw on their technical knowledge in the same way that the big companies do. The results can be amazing.

Only the new *Versaaflow-150*



gives you straight-through packaging with no reciprocating motions

Here's another example of Package engineering leadership—the Versaflow-150. In the Versaflow, you will find an entirely new concept of handling over a wide size range. Packages move straight through the machine on a single level without changing direction. Continuous, uninterrupted speed, from infeed to discharge, assures gentle wrapping without upsetting package contents. There are *no* elevators, *no* reciprocating motions.

A special transfer feature on the Versaflow-150 enables you to feed directly from your production line. No direct drive hook-up is required. Belt infeed receives packages automatically, feeds them to the chain drive. Sealed ball bearings on all turning shafts eliminate maintenance, another Package 'plus' feature.

The Versaflow-150 will handle packages from 6" to 14" long, 3" to 7½" wide, 1" to 5" high. Variable speed drive permits operation up to 150 packages a minute. It wraps with cellophane, wax paper or heat-sealing foil. To get complete details, contact your nearest Package representative.

PACKAGE MACHINERY COMPANY

EAST LONGMEADOW, MASSACHUSETTS
NEW YORK • PHILADELPHIA • BOSTON • CLEVELAND • CHICAGO • ATLANTA
DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • SEATTLE • TORONTO

← For more data, circle this page number on card at back

BURDEN on packaging man is eased by multiple approval of artwork. It gives a voice to other executives, too.

Set-Ups Using One-Man Control

Actual details of four company organizations that feature authoritarian management of packaging functions . . . And a case history of package development.

There's only one way to actually see how different companies integrate packaging into their management set-ups—and that's to examine their organizational structures. Here are four firms that subscribe to one-man control. Each has a different philosophy on the subject of where the control is best exercised—departmentally speaking—but each has a great deal in common in the inter-departmental communications that are so vital to the success of this management system.

Switches to a Manager

Birds Eye Div., General Foods Corp. is a prime example of an organizational structure incorporating both a single packaging manager and product managers (see organization chart).

The latter, located in BE's scheme under the marketing manager, have complete authority over their particular product or product group. And one of their prerogatives is the final decision on packaging design for their products.

Prior to 1956, the actual mechanics of packaging management were split between the sales promotion (design), research (development), and purchasing (procurement) departments. It was found, however, that this system produced considerable duplication of effort and waste motion in the packaging program—various departments independently uncovering the same data while working on different phases of packaging development.

Committee meetings were tried to coordinate effort. But department heads were not always available at the same time, and many packaging problems were in a crash program—with marketing plans and production scheduled for the first possible moment.

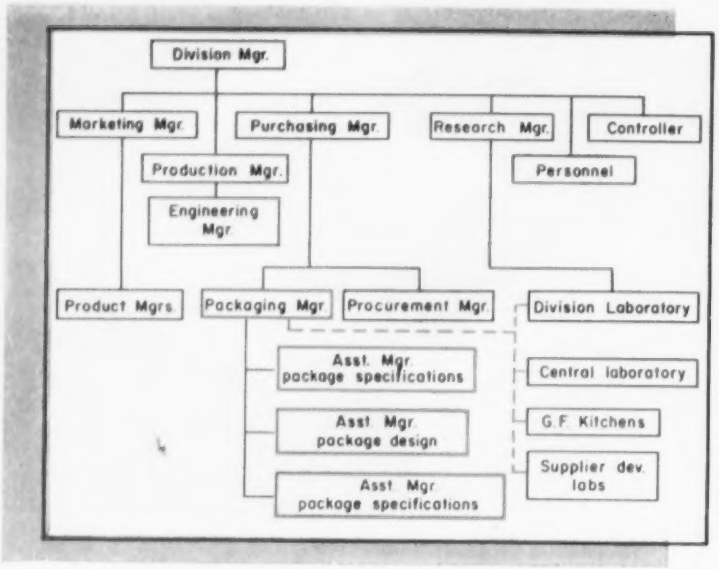
Therefore, it was felt that some central authority was needed to coordinate all of the development, design, and specification factors that go into a complete container.

A study, conducted by the purchasing manager, concluded that the logical placement for such a packaging manager and his staff would be under the purchasing department—provided complete liaison was obtained with the engineering, production, marketing, and research divisions, who also have a stake in all packaging matters.

Accordingly, a packaging manager was established, reporting to the purchasing manager. He operates with three assistants who are responsible, respectively, for package development, graphic package design, and writing of the specifications that are used by purchasing for procurement and by quality control for inspection of incoming materials.

While the product manager still retains complete authority over the product and its final package, both the packaging manager and other department heads (production, engineering, and research) are obligated to make recommendations on matters that fall within their technical knowledge.

In operation, the packaging manager maintains complete control over all phases of package development, from the time the idea is launched until it is approved by the division



SIMPLIFIED diagram shows position of Birds Eye's packaging manager.

manager for production. At this point he turns the completed package over to an associate in purchasing for procurement.

Purchase of printing cylinders or plates, however, is kept under the packaging manager, because of the necessity for checking plate proofs, color specifications, and other printing details.

In his work, the BE packaging manager uses suppliers as his prime source of technical information. However, he also has four GF groups to supply him with specific information: 1. The division laboratory, to which he can turn at any time for help; 2. The GF central laboratory, which constantly performs basic research on broad packaging problems, but also can be retained to work on a specific divisional problem; 3. The GF Kitchens, a staff organization that performs consumer evaluation studies, taste testing, and nutritional investigations; and 4. The Carton and Container Division, a GF-owned plant for production of shipping and product cases. This latter is frequently used for experimental work in packaging by all of the company's divisions.

Overseeing a Main Dish for Two

Here's how the Birds Eye system works in the actual development of a brand new product and package that was only recently released for marketing:

In the early 1950's, the company decided to produce a convenience meal. It considered both a compartmented tray with meat and vegetables, and individual containers of meat and vegetables enclosed in a single carton. When all factors were weighed, the compartmented tray was selected.

Then, in 1955, BE's product manager for specialties got the idea that convenience lies in preparation of food—not in serving. He thought that the housewife would still want to serve her meals on china with napkins and silver, not in a foil tray.

He therefore devised the concept of a main course (entree) that could be heated in an aluminum pan. The housewife would not be restricted to any specific vegetables (as in the TV tray), but could choose from any in the BE line. Since product would be heated in the container, a foil pan was instantly picked because of its appearance, rigidity, and protection. It was tentatively decided to inclose it in an overwrapped carton.

Informal discussions were held by the marketing department with customers, company officials, and GF-Kitchen personnel to see if this idea had consumer appeal. It did.

The question of size then arose. One-, two-, three-, and four-portion sizes were considered. At this point, research entered the picture and started developing formulas for different products at the divisional laboratory in Albion, N. Y.

As the picture clarified, four products emerged for primary marketing consideration: Turkey and pot roast (first completed), then beef stew, and finally haddock with wine sauce.

These were formulated on the basis of one to four servings and presented to marketing (product manager), packaging, production, and research managers at a test session run by the General Foods Kitchens.

Previous to the tests, the packaging department prepared estimated packaging cost-analyses for each size of serving. Likewise, the research department plotted estimated production costs, and marketing added additional figures for warehousing, distribution, and merchandising.

Thus, at the time the kitchen tests were performed, the responsible product manager could closely gage the probable retail price of each package size and product.

On the basis of this data, the manager recommended to the division manager that the idea be carried forward on a two-serving basis.

What Package Size?

At this point, the product manager spearheaded a round-robin discussion among production, research, packaging, and home economics specialists as to the actual number of ounces to be included in the package.

This is not an easy matter, and involves serious consideration of three questions:

1. What is an average serving?
2. How much will it cost to add or subtract an ounce from the portion?
3. What is the estimated retail selling price?

The first question was answered with a poll of institutions, restaurants, and home economists. The second query was determined from data from the research lab on production costs.

The third question was already answered to some extent by the summation of all the costs, which gave a close estimate of the ultimate retailing price. However, in this particular product, the original concept called for a luxury-type product of very high quality. The package was to contain a good hearty amount of product. Therefore, selling price fell—to some extent—in the background.

During this time, the divisional laboratory worked on the formulas for the product — balancing the

Strong squeeze tubes of a Du Pont ALATHON® polyethylene resin provide new food-packaging advantages

Storage convenience . . . no refrigeration necessary. Serving convenience . . . no knives, spoons or spreaders necessary. These are some of the advantages housewives are deriving from Swift and Company's cheese topping, "Cheez Presto," packaged in handy squeeze tubes of ALATHON 20 polyethylene resin. The BRACON tubes made of tough, translucent ALATHON 20, by Bradley Container Corporation, Maynard, Massachusetts, are attractively printed in two colors, and always present a neat appearance . . . even when half empty.

ALATHON is an ideal material for food-packaging innovations. Strong, lightweight and pliable, ALATHON gives superior protection and added attractiveness to a variety of foods. Chemically resistant, ALATHON keeps foreign materials and odors out . . . locks delicate flavors in. Non-toxic, ALATHON imparts no taste or odor of its own to packaged products.

The molecular structure of ALATHON varies with different resins, so that each features certain outstanding properties. If you are seeking a better package for an established food product or wish to devise a unique package for a new product, there is an ALATHON polyethylene resin to satisfy your needs. For more information, mail coupon.

There is a difference in polyethylene resins—specify an **ALATHON®** *for your packaging needs.*

DU PONT

ALATHON®

Polyethylene Resins

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department
Room 267, Du Pont Building, Wilmington 98, Delaware
In Canada: Du Pont Company of Canada (1956) Limited, P.O. Box 660, Montreal, Quebec

SEND FOR INFORMATION

Please send me more information on Du Pont ALATHON polyethylene resins. I am interested in evaluating this material for:

_____
_____
_____

Name _____
Position _____
Firm Name _____
Street Address _____
City _____
State _____
Type of Business _____

For more data, circle this page number on card at back →

almost every packaged poultry product . . .

has more glittering display value . . .

greater heat-and-serve consumer convenience . . .

when it's in a proven-by-sales package by . . .

The Plus Container

EKCO-ALCOA CONTAINERS *Inc.*
Wheeling, Illinois

EKCO is the registered trademark of Ekco Products Company. ALCOA is the registered trademark of Aluminum Company of America. The corporate name and combination mark, EKCO-ALCOA, is used under license to the manufacturer by each of these companies.

amount of meat with gravy and vegetables (if any) for the best effect. As each formula was finalized, it was tested before the managers in the GF Kitchens.

Through this accumulated information the final weight of each product was established.

From this figure, the packaging department determined the cubic content of the container, then sought out suppliers who might have a stock foil pan of the right size (in this case Ekco-Alcoa, Foilcraft, and Reynolds).

Foilcraft, it happened, had a container with the correct linear dimensions, but one which was too shallow and with the wrong type of lip.

However, this container could be used for the multitude of further tests needed before the product was ready for market—without the necessity of GF investing in a die.

TWO YEAR development for line of frozen entrees entailed detailed planning by purchasing, research, and marketing groups at GF's Birds Eye Div.

Testing the Specs

Several hundred containers of the four products were put up in the prototype container for marketing, storage, shipping, corrosion, and taste tests.

Both the product and its container were carefully evaluated to see how the gravy and other components stood up over various storage periods, and whether or not components of the product caused corrosion of the container.

All these tests are run for the packaging department by the research section—with packaging being responsible for the physical aspects of the package, and research handling the product evaluation.

Packaging men checked on the necessary strength of the container in conjunction with the production and engineering departments.

Throughout this period, marketing kept an eye on the developments, OK'd each modification with respect to its effect on retailing and consumer acceptance.

Take one example: Originally it had been planned to use a flexible foil lid for the pan. But tests showed that a foil and paper laminated lid would boost rigidity of the package and, if equipped with a tab, would be easier for the housewife to remove. The production dept. also felt that this closure would be easier to apply on the line.

Further, corrosion tests disclosed that this lid would need a vinyl coating to withstand product attack.

But the new lid necessitated a redesign in the pan lip and the development of a then non-existent closing machine.

Since the company had not purchased dies yet, this change in design was easily accomplished. And the packaging and engineering departments, working through the supplier, devised a semi-automatic closing machine to handle the new lid. This will soon be outmoded by completely automatic closers, now under development by both Ekco-Alcoa and Foilcraft.

After final tests, the company was ready to order the dies used to form the pan. Since these units are very expensive, the step represents a point of no return.

Every precaution must be taken in preliminary research to avoid the necessity of further changes that would require the re-ordering of new dies.

With pan size set, the packaging department proceeded with the specification of caliber and weight of the product carton. Style was determined with the packaging men in consultation with production and marketing specialists.

The engineering department arranged for lease or purchase of the necessary machinery.

At the same time packaging and marketing men huddled to work out different ideas on overwraps. Varying materials were discussed, both from their merchandising and economic viewpoints.

Working Out the Graphics

At about the time the dies were purchased, the graphic arts expert in the packaging section started consultation with the product manager on how they would depict or present the product to the consumer.

With the approval of the product manager, the graphics man selected an industrial package designer to draw up the art work (Frank Giannoto Associates).

At Birds Eye, copy is generally written by the editorial staff of the GF Kitchens, but may also be handled by the product manager or the advertising agency (Young & Rubicam). Layout, type, and art work are the ultimate responsibility of the packaging section.

Final mechanical drawings and color overlays were circulated to all department heads for approval, and rotogravure cylinders made.

A similar procedure was followed for both the printed tray lid and the shipping case.

The graphics man followed completely through, checking proofs and setting up color standards and tolerances for the printer.

Meanwhile, the specifications man in the packaging section drew up complete and detailed specs—complete with blueprints — for all the component packaging pieces. These were formally presented to the purchasing department.

Packaging also turned over complete costs for the packaging operation—obtained from the separate venders—to the accounting department, which prepared an accurate cost sheet.

From this, the product manager drew up a marketing plan with the aid of the advertising agency. This comprehensive document — literally the size of a thick book—spells out, among other things, just how the products are to be marketed, how much money will be spent on advertising, where the product will be advertised, and the expected sales in

various regional marketing areas.

This document is presented to the division manager. If he approves, he issues orders for the necessary materials to be purchased, production schedules are set up in the plant, and the product is on its way. In the case of our example, this point was reached in 1957—two years from the time the original idea was formulated.

But, even after the product is in active production, the responsibility of the packaging section does not end. True, the development man relaxes direct control on the package and turns to new problems, and the graphics man is generally finished with his part. But the specification man settles down to work in cooperation with production men — whittling away at packaging costs.

In the new Main Dish for Two, there have already been some cost-saving modifications. The tray has been lightened, the decrease in rigidity being off-set by a sunburst embossed design in the bottom.

Since sealing of an overwrap coated with ink is difficult, production and graphics have worked out a design change whereby ink is eliminated from the sealed portions of the overwrap.

Three Other Types of Thinking

While the system just described works very well for GF, other companies with authoritarian set-ups have made different adaptations to suit their own particular needs.

Three such organizations that stand out, and serve to illustrate different types of management thinking, are The Nestle Co., The Welch Grape Juice Co., and The Borden Co., Fluid Milk & Ice Cream Div.

The Nestle Co. emphasizes the marketing function of packaging.

Here, all products are controlled by product managers, located under the sales vice-president. On the same level is a product development man, with one assistant, who is considered by Nestle management to be the "product manager" for new products.

When a new product idea is launched, this man collects and correlates data from purchasing, engineering, manufacturing, market research, quality control, and finance and forms a preliminary appraisal that sets forth the probable competitive position of the new product.

Packaging is noted in this plan, but is not a major point.

The prospectus is presented to a management committee, composed of the vice-presidents of sales, advertising, and manufacturing.

If approved, the new product manager launches a much more detailed study that refines the cost data, marketing information, etc. At this point, the fine details of packaging are drafted with the technical research department (located under manufacturing).

When the second study is approved by top management, a proposed marketing plan is drawn up by the new products manager that includes the sales forecast and scheduling. If approved, the project fans out to various departments for execution under a market manager.

The new-products man issues general specifications for both product and package. A purchasing agent orders materials. Operations arranges production schedules and calculates warehouse stocks, based on detailed sales forecasts. And manufacturing integrates the new product into production lines.

In addition to the three, checkpoint conferences held by top management on new product progress, other meetings are held by the new product manager with other department men on his level to check progress and make sure that all departments are in agreement on aims and details. While this is certainly a committee arrangement, the basic operation and control is retained in a one-man system.

Changes in existing products are run in much the same manner, with one exception. They are controlled by the marketing manager charged with responsibility for the particular product.

Because of the complexity of modern packaging materials, the company has now created a new post—packaging engineer—which will be located in the engineering department under manufacturing.

He will serve as a staff functionary. His responsibility will be to coordinate cost data on packaging materials, and to keep abreast of new developments in materials and machines. His information will then be available to any person—particularly the new product manager—who needs the technical data.

Control By Project Manager

At Welch, packaging development is also tied with product development, though specific duties are split between three departments.

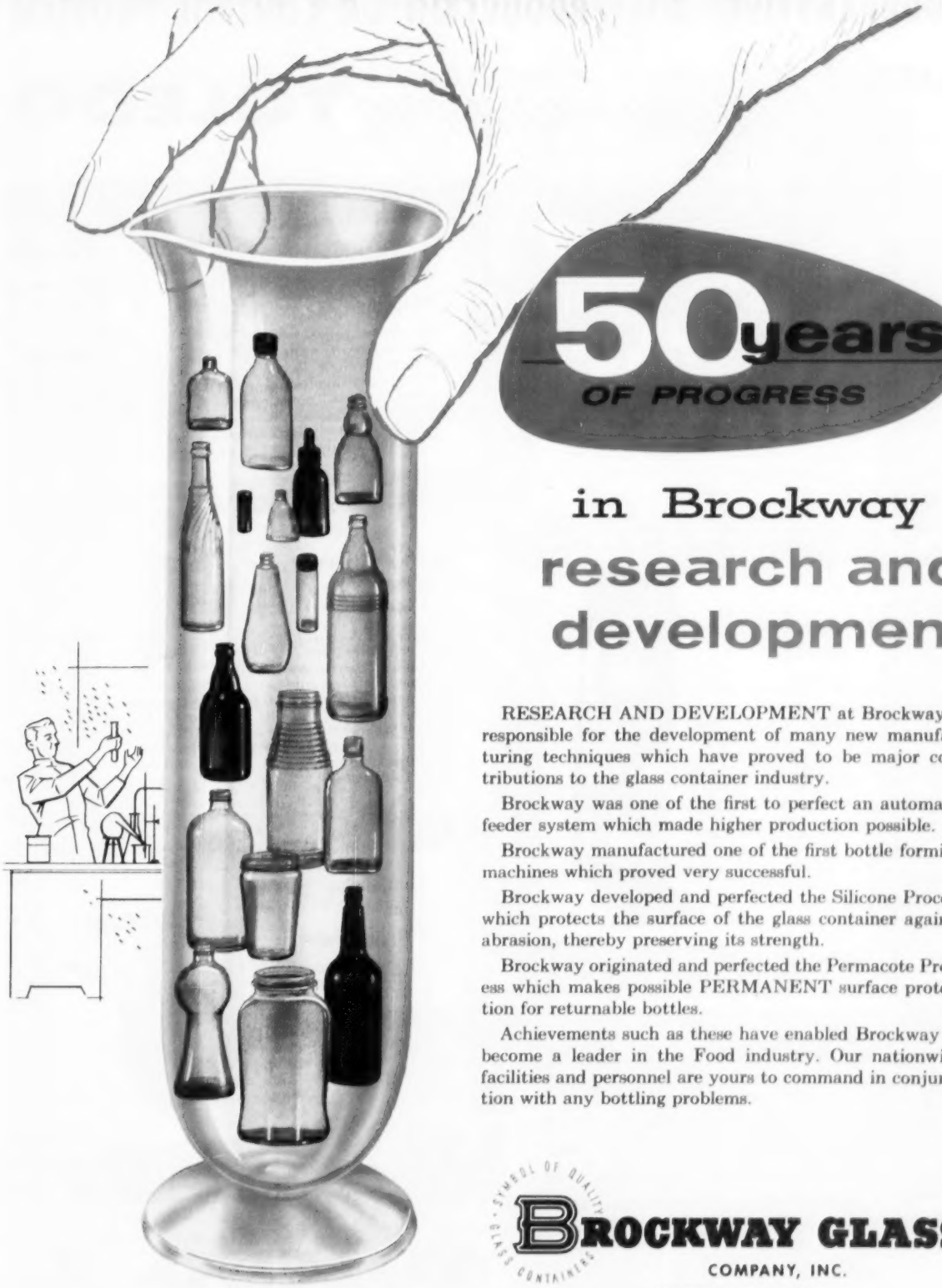
The product is perfected by research (new product development group). Package design and graphics are worked out in the sales department.

But the overall coordination of all the packaging functions rests with a special project manager in the operations department. This key man handles development of not only packages, but any engineering or production program.

Initiation of projects rests with a top management group, composed of departmental administrators and two executive vice-presidents. But once a project name and number is tagged on an idea, it becomes the responsibility of the project manager (an industrial engineer) to coordinate work of the various departments.

Purchasing obtains models and

TRANSITION of Nestle's instant tea jar ranged from original bold graphics (left) to banner label for improved product (center) and new, subtle design (right).



50 years OF PROGRESS

in Brockway research and development

RESEARCH AND DEVELOPMENT at Brockway is responsible for the development of many new manufacturing techniques which have proved to be major contributions to the glass container industry.

Brockway was one of the first to perfect an automatic feeder system which made higher production possible.

Brockway manufactured one of the first bottle forming machines which proved very successful.

Brockway developed and perfected the Silicone Process which protects the surface of the glass container against abrasion, thereby preserving its strength.

Brockway originated and perfected the Permacote Process which makes possible PERMANENT surface protection for returnable bottles.

Achievements such as these have enabled Brockway to become a leader in the Food industry. Our nationwide facilities and personnel are yours to command in conjunction with any bottling problems.

SYMBOL OF QUALITY · GLASS CONTAINERS ·

BROCKWAY GLASS

COMPANY, INC.

BROCKWAY, PENNSYLVANIA

Sales Offices in Principal Cities

Subsidiary:

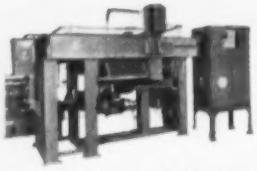
Demuth Glass Works, Inc., Parkersburg, W. Va.

Plants: BROCKWAY, PA. • CRENSHAW, PA. • FREEHOLD, N. J. • LAPEL, IND. • MUSKOGEE, OKLA.

For more data, circle this page number on card at back →

YOUR ANSWER TO A PRODUCTION OR CONTROL PROBLEM MAY BE A *Custom-Engineered* TOLEDO

Product Testing and Sorting



This custom-engineered Toledo automatically tests and classifies coil springs for automobiles at the rate of 900 per hour. It is one of many types of Toledos used in classifying, testing and balancing.

Automatic Bulk Weighing

Accurate, printed weight records of bulk materials such as flour going into truck or carload shipments are provided by this Toledo. Automatically weighs materials and transmits weight data to remotely located adding machine for totalizing and recording.

Automatic Liquid Filling

This Toledo provides fast sub-surface filling of drums, eliminates frothing—cuts off flow of liquid precisely and automatically. Speeds liquid handling operation. Indicates tare, gross and net weight.

Electronic Weighing with Remote Dial Location

Toledos with electronic load cells eliminate mechanical connections between platform and scale head; bring new flexibility to testing and weighing operations. Dial may be located wherever desired and weight data fed into a variety of recorders and office machines for processing. Digital indication, if desired.

Centralized Control of Weighing Systems

Complete, centralized, push-button control of batching or filling operations is provided by Toledo Control Consoles such as this. Listing and adding unit receives weight data directly from remote scales.

Whats your problem?

Whether the answer lies in a custom-engineered Toledo unit, a special adaptation or in one of the wide selection of standard Toledos, your inquiry will receive prompt attention. Write today. Toledo Scale Company, Toledo 13, Ohio.

TOLEDO®

HEADQUARTERS FOR SCALES

SERVICE Factory-Trained

FLOOR AND TRUCK SCALES

BENCH AND PORTABLE SCALES

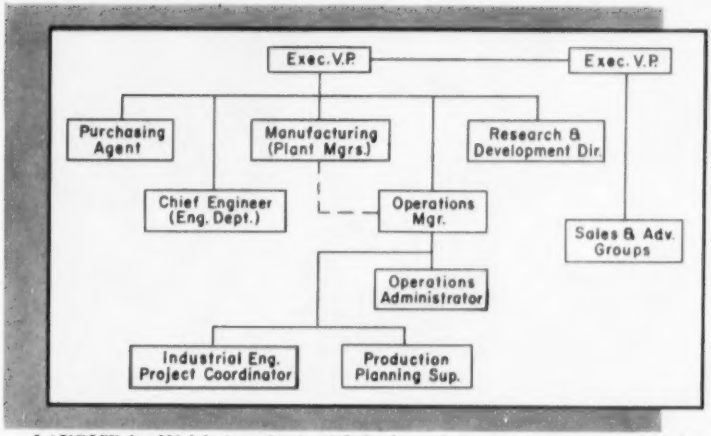
OVER-UNDER SCALES

WEIGHT PRINTING

OVERHEAD TRACK SCALES

COUNTING SCALES

← For more data, circle this page number on card at back



LAYOUT for Welch (greatly simplified) shows location of packaging administration under the operations department. Effective management planning. . . .

. . . **PRODUCED** this unorthodox thumb-print jar for grape preserve.

drawings of the projected container. Sales specifies the number needed for initial market tests. QC tests package for fill and overflow data. Engineering and operations produce a test run at the nearest available Welch plant (usually Westfield).

Then, a truck or carload of containers is ordered in and a more extensive run is made under the supervision of the project coordinator, a QC representative, and the plant manager. This run is used for market data.

Top management, which has been kept appraised and has passed on each progressive stage, is now given a full report on package closing procedure, breakage or waste, and adaptability of the container to production.

Label, cap, and carton designs, previously worked out by sales and purchasing are approved—then the accounting department estimates production costs.

One very important result of the system used here at Welch is a highly detailed history of every project, which is of inestimable use in shortening future project work and in avoiding duplication in research work.

Advertising Holds the Reins

Borden's situation is radically different from those of the previously discussed companies. Not only is the fluid milk and ice cream division highly decentralized from the parent company, but the geographical area managers are strongly independent from the division staff. This split is a natural consequence of the localized nature of ice cream and fluid milk sales.

As a result, development of new packages and package changes are concentrated at the headquarters—and are the sole responsibility of the advertising department.

If a new package idea generates in the field, it generally stems from the salesmen. They report to district chairmen, who discuss the idea at regular meetings (held at least twice a year). If the project is agreed on by a majority vote, the general manager turns the idea over to the advertising department.

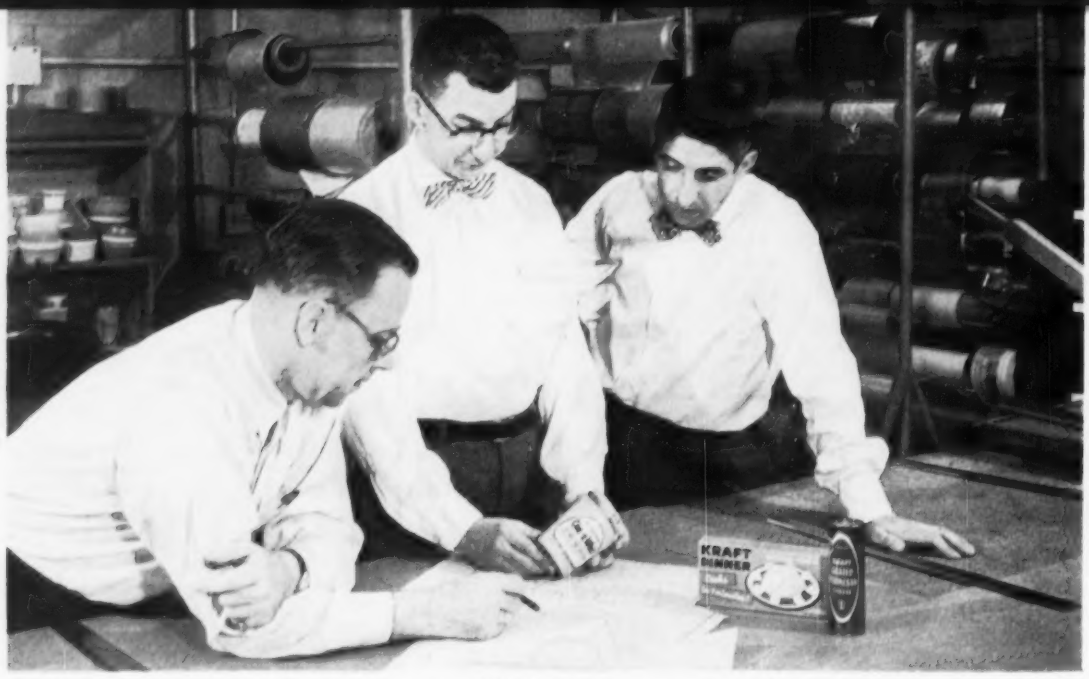
The division uses an industrial designer (usually Frank Gianninoto Associates) on a year-around basis. The advertising department selects or modifies one of the designer's concepts for the new package. After approval by the general manager, it is presented to the district managers, who approve or further modify it.

Consultation is then held by advertising with the supplier, the designer, and the purchasing department on feasibility of the design, and the possibility of further modifications to save costs.

Final approval of design is always given by the district chairmen at their meetings.

This system is particularly adapted to Borden's special promotional program. During the peak sales periods for ice cream, there are three special flavors that are given intense promotion for two-month periods. The advertising department, which naturally has the biggest stake in these special products, thus retains complete control over package development, prepares the entire merchandising program in advance, then presents the result to the chairmen for approval.

PACKAGE DESIGN is complicated, at Borden Co., by special-promotion product (left). Note up-dating of standard ice cream carton (packages right).



STAFF CONFERENCE in huge packing section of Kraft Foods Co. irons out specifications for packaging materials and production procedures. Actual trial runs of new containers pin-point final packaging methods.

Large Scale Development Programs

Departmental set-ups are for companies engaged in huge packaging programs. Here are two examples that still nominally retain the one-man authority

Where packaging studies cut across virtually the entire range of containers now on the market, and are not decentralized on a divisional basis, the central group in charge of development becomes enormous—in fact takes on the proportions of an entire department.

Here are two such companies—H. J. Heinz and Kraft Foods—that subscribe to one-man control in its broad management aspect, but because of the extent of their programs find it necessary to make use of other techniques to fully coordinate packaging functions.

Research Carries the Ball

At Heinz, packaging control is vested in the research and quality control division—where good management has enabled savings of $1,000,000 per year just on materials.

This division is divided into five departments:

1. Factory quality control
2. General quality control laboratories
3. Product development
4. Engineering research
5. Food and Food technology research

Package specifications are a function of the general quality control laboratories and are paired with sterilization studies, because the necessity for heat preservation in most of the Heinz products directly affects the packaging.

Package design and label design are worked out in the product development section, which maintains close liaison with marketing and sales (who approve final graphics).

During the development of specifications, the packaging section consults with the company engineers and the manufacturing department to determine whether or not adjustments in design or in packaging equipment are necessary for smooth, line operation. Finished specs are turned over to the purchasing department for procurement.

This formal organization, however, is supplemented at Heinz with a package advisory committee. This group has no authority, but serves to keep all interested parties informed on packaging progress through weekly meetings.

The head of the packaging and sterilization department chairmans this group, which draws members from the following departments and divisions:

1. Procurement
2. Cost estimating
3. Manufacturing scheduling
4. Process engineering
5. Product development
6. Recipe and process
7. Marketing
8. Distribution and warehousing

To boost productivity of the development groups, and avoid nonessential work, a management screening committee determines what ideas are worthy of either package or product research.

This group, called the new varieties screening committee, is composed of the vice president of research and quality control (chairman), vice president of marketing, vice president of foreign operations

FOOD FOR PACKAGING THOUGHT!

Whatever you package – meats, fish, cheese, vegetables, nuts, baked goods – Cellothene gives it the look that sells. Cellothene packaged foods trigger sales because appetizing flavor is sealed in... freshness and goodness can be seen! Crystal-clear Cellothene is a pure film laminate of Cellophane and Polyethylene . . . tough enough to withstand abusive customer handling at self-service counters. Easily printed, Cellothene packages carry your selling message and brand identification brilliantly at the point of sale. For an eye-stopping, sales-inducing showcase for your food product–consider Cellothene.

ELIMINATE COSTLY WEIGHT LOSS WITH THE VERSATILE *5in1* VAC-U-SEAL PACKAGING MACHINE

It Vacuum Packs, Gas Packs, Vacuum & Gas Packs, and Heat Seals 10 to 15 Cellothene Pouches per Minute—All on One Machine Without Adjustments. Unlimited Sizes from 1" to 25".

Cellothene®

the Best Packaging Film for Perishable Food!

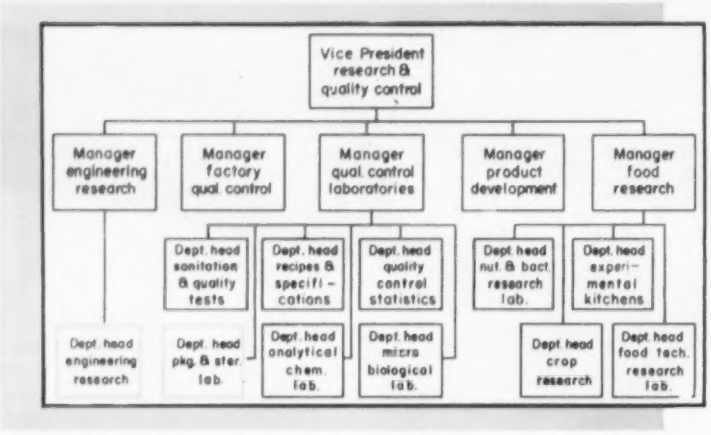
FE 7-57

CHESLAM DIVISION
St. Regis Paper Company
684 Hepperhan Avenue, Yonkers 2, New York

☐ Please send me your Vac-u-Seal Brochure.
☐ Please have representative call.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____ STATE _____
CITY _____

CELLOTHENE IS THE REGISTERED TRADE MARK OF **CHESLAM DIVISION** ST. REGIS PAPER COMPANY, 684 HEPPERHAN AVENUE, YONKERS 2, NEW YORK


Vice President research & quality control
Manager engineering research
Manager factory qual. control
Manager qual. control laboratories
Manager product development
Manager food research
Dept. head sanitation & quality tests
Dept. head recipes & specifi-cations
Dept. head quality control statistics
Dept. head nut. & bact. research lab.
Dept. head experi-mental kitchens
Dept. head engineering research
Dept. head pkg. & ster. lab.
Dept. head analytical chem. lab.
Dept. head micro biological lab.
Dept. head crop research
Dept. head food tech. research lab.

BREAKDOWN of research and development division at Heinz graphically portrays the packaging elements in a large program.

(executive office representative), and the manager of product development.

An idea that passes this test is assigned a project priority number, and enters the developmental group.

When all departments are in agreement on the final product and package, the work is laid before a top management operating committee. Also presented at this time are facts on the financial structure of product and package, which have been assembled during the later phases of design development.

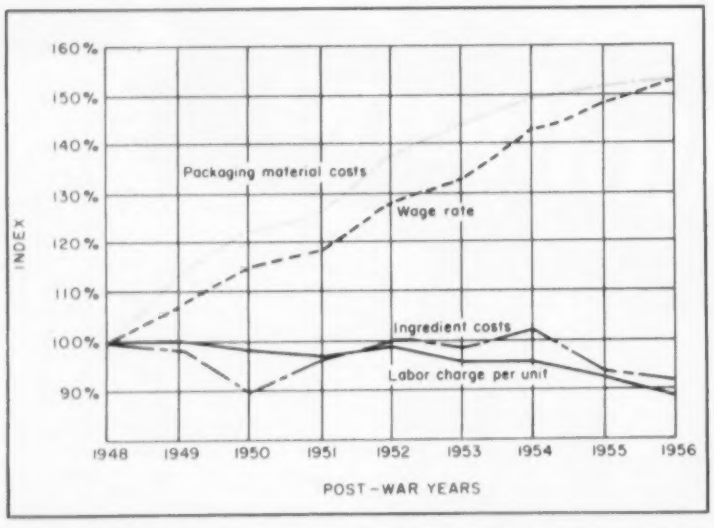
Operating committee approval constitutes official authorization for the construction of unit molds (glass containers) or purchase of other containers.

A trial batch of product is run in the container to confirm experimental data on net weights, headspace, and other operating factors. Approval of this run constitutes authority for the product development department to write a notice of new pack. This document, cleared by the research and development staff officials, is submitted to the operating committee for approval and then circulated to all divisions and departments in the company.

The action triggers plans for procurement, production, promotion, and advertising—which are all geared to the expected production date.

Heinz aims at two broad concepts in its packaging program: 1. To improve package appearance, and 2. to pull down the rising cost curve for packaging operations.

In the latter area, the company has done a notable job through intelligent specification of packaging materials, and a careful supplementary program of statistical quality control.



NEED for extremely close control on specifications and production is emphasized by this Heinz chart showing soaring cost of packaging materials.

Statistics—A Purchasing Ally

The company firmly believes that packaging specifications must clearly define the proper level of quality and permissible variance from this standard, that specifications must be founded on solid facts and be reinforced by a system of control and inspection, and that cooperative relations between the company and its suppliers is vital to the success of the packaging program.

Procurement of packaging supplies at Heinz is, of course, the responsibility of the purchasing department. But quality of these goods is the joint project of both purchasing and QC.

In developing the specifications, the package laboratory obeys the following four concepts:

1. "Specs" are designed with the fewest possible restrictions. Unnecessary strictures lead to unworkable "specs", and a constant plea by suppliers for concessions.

2. All departments affected by the "specs" have a voice in their preparation.

3. All "specs" are tailored to be acceptable to both Heinz and its suppliers, without reservations. Frequent meetings with suppliers iron out differences.

4. Necessary revisions are discussed with suppliers, and approved changes are promptly issued to all plants, departments, and suppliers.

Acceptance sampling of packaging materials on a statistical basis is relatively new at Heinz—the program having started in early '53 on glass containers.

Increased production speeds have highlighted the need for uniform containers, and thus have justified the additional personnel, equipment, and laboratory space needed for the glass inspection procedure.

Now, the company has additional programs in operation for checking tin cans, metal lids, and labels.

In the beginning, conferences

When you **can** *sunshine...*

put the sun on the inside
and the shine on the outside

and you *can* with CROWN—quality containers to suit your exact requirements . . . when and where you want them, to suit *your* production schedules.

Complete package design and merchandising assistance . . . modern lithography equipment and techniques . . . and experienced research and engineering service . . . all come with that *extra* touch of CROWN personal attention. Plants and offices in Orlando and Bartow—and 16 other strategic locations.

Write for your copy of CROWN's new booklet, "Crown Art and Lithography." Crown Cork & Seal Company, Inc., Can Division, 9318 Ashton Road, Philadelphia 36, Pa.

whatever you can . . . call on CROWN

CROWN CORK & SEAL COMPANY, INC.

MANUFACTURERS OF CLOSURES, CONTAINERS AND MACHINERY

For more data, circle this page number on card at back →

polyethylene

+ STOKESWRAP

= maximum protection

in flexible packaging for...

fruits and vegetables

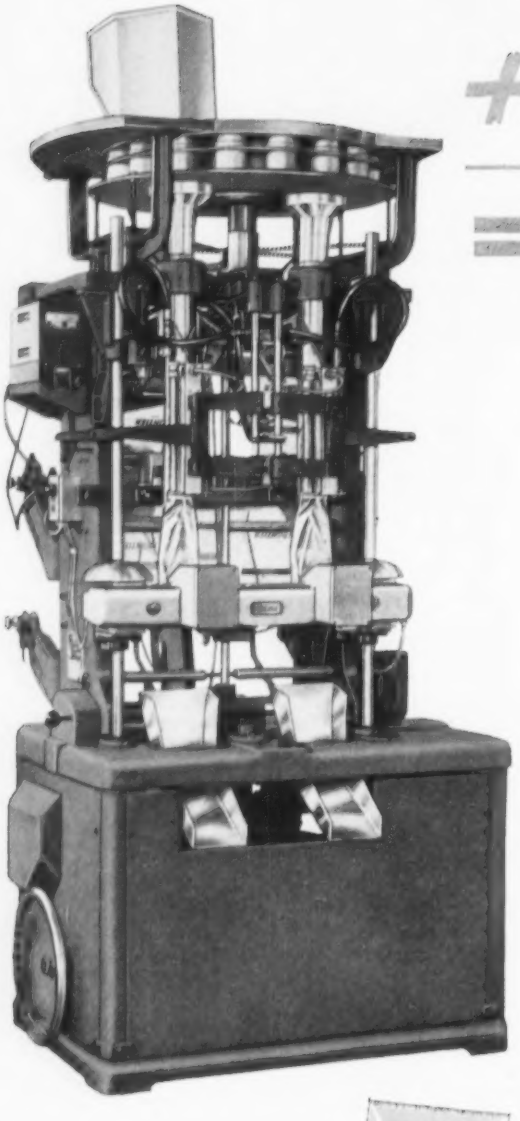
hardware

chemical powders

frozen foods

candy detergents

and many other products



Positive Seal—No Film Waste

Impulse sealing provides for the cut-off right at the seal, eliminating the tabs of conventional sealing resulting in substantial film savings.

To assure flexible packaging with maximum protection of the contents, STOKESWRAP forms clear or printed polyethylene film into a pillow type package having exceptionally high strength and resistance to rupture. This development makes possible the packaging of products heretofore too heavy to be satisfactorily handled by other materials.

A new impulse principle for sealing the polyethylene web results in strong, positive seals and eliminates film waste as well. Electric eye registration of printed film, sealing and cutoff are all achieved in one simultaneous automatic operation at high speed. The web is held in constant tension, with no reversing, for smooth, trouble-free operation.

A wide selection of feeds...pocket, auger, tablet counting, liquid, net-weight scale and special mechanisms . . . make STOKESWRAP well suited for low-cost high-quality polyethylene packaging of a great variety of products.

For complete information, write to:

FMC PACKAGING MACHINERY DIVISION

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

Stokes and Smith Company

4914 SUMMERDALE AVE.
PHILADELPHIA 24, PA.

← For more data, circle this page number on card at back

with suppliers resulted in a list of defects normally found in the packaging materials. A current problem is the classification of these defects as to degree of severity. After limit samples have been gathered—no mean task in itself—acceptable tolerances will be agreed upon by the company and its suppliers.

More Emphasis on Research

Organization of packaging is set up in a rather different manner at Kraft Foods Co. Here, packaging responsibilities are split into two functions: All packaging materials, packages, and specifications are delegated to the package research section of the research department. Selection and development of packaging equipment is the responsibility of the package engineering section of the engineering department.

Packaging projects, which stem from any department, are automatically assigned by management to one of these two sections. In the research lab, a project authorization is written, and a project leader assigned to the problem.

The approach is spelled out in detail. Estimates of time and costs needed to conduct the research are established, and the project leader pursues his study, reporting on progress at frequent intervals.

As the solution draws near, sales, advertising, production planning, and purchasing departments are alerted. Since they have been kept up to date by the project leader on the particular problems and changes necessitated by the new development, the final transition is accomplished without hitches.

Packaging research is considered a service group by Kraft management. It serves as liaison on all packaging matters except advertising, copy design, and art work (though a close contact is kept even here).

Most important part of this laboratory is, of course, the personnel—chemists, engineers, technicians, and the project and group leaders who steer the project, interpret results, and write the final reports.

Because of the size of the Kraft operation, and the broad range of products packaged by the company, there is a high degree of specialization. No one person is capable of conducting all the work. For problems in wrapping bulk, rindless cheese for curing, storing, and shipping are considerably different from those involved in packaging consumer products like sliced, processed cheese, margarine, or fruit preserves.

Therefore, one group of experts handles studies of corrugated shipping cases and paper packages, another works with flexible films and foil, and still another investigates glass and other rigid materials.

The company further specializes its research with men who are experts in particular product groups—such as natural cheese, processed cheese, salad products, and confections. In addition there are other specialists who carry these products into production and conduct necessary field work, write specifications, and maintain records.

First concern in any package development project at Kraft is a thorough assessment of chemical and physical properties of the product. Here, the product research group is invaluable—supplying specific details on such vital considerations as moisture equilibrium, moisture content, oxidative properties, and bacteriological factors.

In addition, this department judges the protective effectiveness of the proposed package for the project leader, and makes available trained taste and preference panels for consultation.

The engineering department supplies machine experts to solve unusual mechanical problems.

After marketing surveys have been run by the market research department—from several hundred selected families to four or five cities—the product is ready for full scale production.

Packaging research assists the engineering department in installation and operation of the equipment, and sets up QC procedures on both packaging materials and the product.

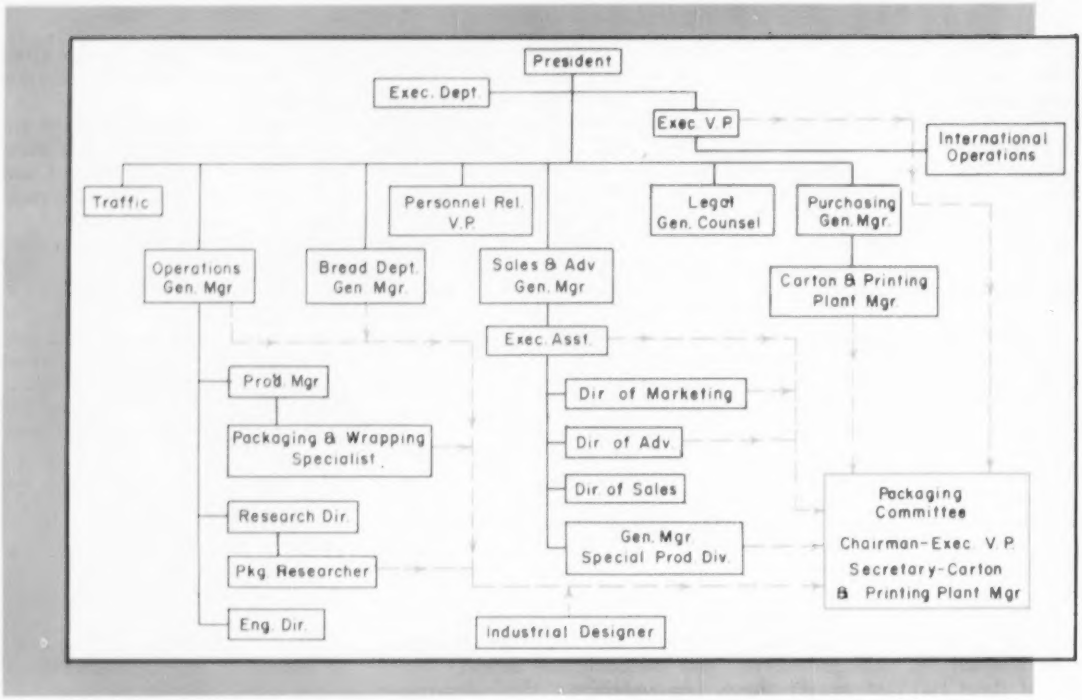
The department also helps purchasing with detailed "specs" and technical contact with suppliers to solve minor changes in container design. It acts as a consultant to production engineering on matters of filling, installation, and standards.

Advertising receives details on the package that can be used in promotion, and sales managers are briefed on container background and the reasons for its choice.

Even after the item is in full national distribution, packaging research continues its role by carrying out a statistical investigation of fill weights for greater economy of product, and by analyzing the container to determine the acceptable minimum weight of material needed to insure satisfactory strength and performance in the package.

However, along with this planned program of projects, the packaging research group at Kraft are always on call whenever suitability of a supply item is in question, or when packaging equipment deviates from standard performance. These latter services to other departments account for about 40% of the work.

FULLY EQUIPPED testing labs at Kraft enable researchers to subject packages to rigorous examination. Here, impact machine simulates rough handling that packaged products will encounter during shipment.



WIDE REPRESENTATION of company interests is focused in the packaging committee at Nabisco. Unusual touch is regular participation by a representative of the firm's industrial design agency.

Effective Committee Systems

Here are three firms that adhere to round-table discussion—and get things done by appointing a "sparkplug" to coordinate action

Despite the increased importance of the single packaging specialist, there are still many companies that favor a true committee approach when tackling packaging problems.

Perhaps the most distinguished of these is the National Biscuit Co. In an era when diversification and decentralization of products and organization are considered synonymous with corporate success, Nabisco stands almost alone among large U. S. companies with its strongly centralized management.

Group Action is the Rule

There's good reason for this. Unlike most large companies, NBC has focused its product expansion in a vertical direction, thus the increased problems of management have been of a familiar type—ones easily handled by the concentration of experienced personnel in the main office.

Committees are an integral part of Nabisco's management system. Three director's groups—executive, audit, and salary—help to guide the company. Five administrative committees actively plan the company's operations.

One of these latter groups is the packaging committee. It is composed of ten men representing the following departments and functions:

1. Executive vice-president—chairman, and ex officio member of all committees.
2. Packaging division manager—secretary, located under purchasing.
3. Administrative assistant to general sales manager.
4. Director of marketing.
5. Director of advertising.
6. Director of operations.
7. General manager, special products div.
8. Assistant director of production for packaging.
9. Head of laboratory packaging research.
10. General manager of the bread department.

In addition to these men, a representative from Nabisco's industrial designer (Raymond Loewy Associates) always sits in on the meetings, an innovation which greatly increases the designer's effectiveness by broadening his knowledge of basic packaging problems.

The committee, a coordinating agency that channels the activities of every department concerned with the packaging function, divides the problems deposited at its door into

two categories: 1. Long range projects, such as a brand new package that may entail extensive design work and marketing tests, complete redesigns of an existing package, appraisals of existing packages to determine their actual sales success, and increased coordination of packaging functions; and 2. Short term problems, such as minor design changes, and reports on new packaging materials.

The committee secretary requests the meetings (at least once a month), arranges the agenda, and coordinates tasks that involve more than one department.

The chairman calls meetings, and assigns projects to the different members, after discussion has fixed responsibility.

Each member of the committee has an alternate in the event he is unable to attend a meeting. The chairman has two alternates.

Since Nabisco covers the country with a network of about 3,500 salesmen, many packaging ideas naturally stem from them. But new projects can be brought up by any member of the committee. Open items are carried over on agendas until solved or rejected.

The manager of the packaging division is a logical choice for secretary of the committee in this organization, because Nabisco manufactures better than 50% of its cartons and wrappers in two, completely-owned converting plants.

Much of the company's research in printing and package construction is concentrated in these facilities, which reduces NBC's dependence on outside suppliers.

After the committee members have finished their assigned tasks on a project, and the new package design has been formulated (with perhaps the help of Nabisco's own art department, located in advertising), final approval is obtained from advertising, marketing, sales, legal, production, purchasing, and executive departments. And the package is ready to roll.

Top Management Has Its Say

R. T. French Co. has a similar management committee set-up for its operation—with the emphasis, however, in a slightly different direction.

Here, company operations are controlled by three committees—marketing, research and development, and works management. The packaging group is a sub-committee of research and development, and is chairmanced by the director of production. Other members: Sales promotion manager (secretary), director of purchasing, director of research, director of advertising, assistant to the president, assistant general sales manager, and the sales personnel manager.

The purpose of the committee system at French is to give younger members of the management team a voice in governing the company. This principle has not been fully put into effect on the packaging group, however, since the four directors, and the presidential assistant are also members of both the top-management research and development committee and the board of directors—a good indication of the emphasis placed on packaging.

As secretary, the sales promotion manager has the job of conveying committee opinion on packaging matters to the various departments, and coordinating action. He is also responsible for graphic design and specifications.

At the end of each year, he draws up a report on progress and a list of all suggestions and problems received from any source. The general committee program for the following year is formulated from this report. Committee meetings are held at least once a month.

Decisions are arrived at by majority vote. Any insoluble difficulties are forwarded to the research and development committee for a ruling.

New Pack for Instant Mashed

Take a fairly recent example of package redesign that involved the cooperation of every company department—evolution of a new container for French's instant mashed potatoes.

From field reports, the committee decided that the original potato package—a plain carton with inner liner—was not enough protection for the product.

Through the purchasing department, the research group obtained samples of new materials for evaluation. A foil-paper laminate, formed into envelopes, was picked as having the requisite properties, providing the product was given additional nitrogen protection.

The committee designed the envelopes as a group project. After much discussion and kitchen tests, four-serving envelopes were selected as the proper size, two of these to be enclosed in a single carton.

Meanwhile, purchasing had made a survey of packaging machines. Production looked at each unit to check its feasibility for the packaging lines. At the same time research came up with the idea of "washing" the product in a counter-flow current of nitrogen to eliminate the slow-speed process of evacuating air from each pouch and replacing it with nitrogen.

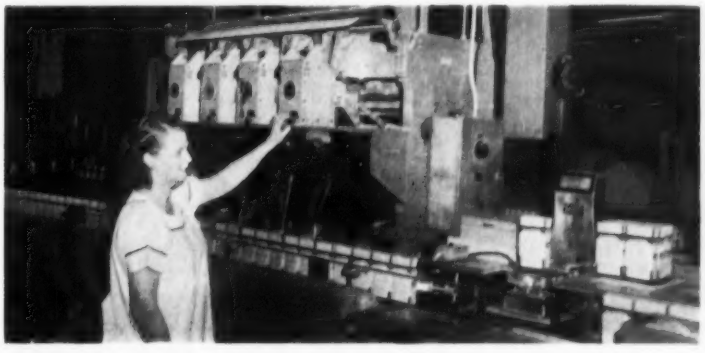
This ingenious scheme was coordinated with the search being made by production and purchasing for the right machine.

Additional instruments and equipment for laboratory and production line control of the gassing operation had to be found also, and integrated into the program.

Simultaneously, the marketing department conducted interviews and tests to evaluate new designs for the outside carton. A large, clean potato was found to be a good symbol. This design was worked out within the company.

All of the separate activities were

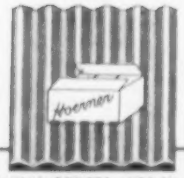
STATISTICAL CONTROL of fill weights starts on the line at Mueller. Operator checks cartons from each machine head, then adjusts controls.



Hoerner Boxes, Inc. has been keeping company with American Can for *12 years . . .*

Over the years Canco has supplied cans for everything from beverages to foods to motor oils and chemicals. For 12 years now Hoerner corrugated containers have been taking these Canco cans to processors all over the country. And just as Canco designs cans to fit specific needs, so too, Hoerner corrugated containers can be designed to fit your particular product. Call in a Hoerner Packaging Engineer. Let him help you pry the lid off any packaging problem you may have.

Call or write the plant nearest you



HOERNER BOXES, INC.

GENERAL OFFICES—*600 Morgan St., Keokuk, Iowa* • **PLANTS**—*Keokuk, Des Moines and Ottumwa, Iowa Sand Springs, Oklahoma • Minneapolis, Minnesota • Fort Worth, Texas • Sioux Falls, South Dakota Fort Smith and Little Rock, Arkansas • Cajas y Empaques Impermeables, S. A., Mexico City D. F., Mexico*

reported on at committee meetings, and acted on by all the members. The secretary coordinated inter-departmental work.

At French, most of the packaging ideas stem from the sales force, or from members of the committee.

Specialist in Statistical Control

One of the most important functions of packaging is fill control. And an expert practitioner of this important operation—in a particularly difficult product field—is C. F. Mueller Co., a manufacturer of macaroni, spaghetti, and noodles.

By combining careful line checks with statistical analysis, this company has brought its package weights into extremely fine line, thus saving money through reducing over-fills and avoiding trouble with Federal inspectors from underweights.

Mueller's overall management system is run by a committee composed of the president, executive vice-president, department managers, and the plant superintendent. Packaging design and procurement is the function of the purchasing department, who checks with production for feasibility.

However, the control system is located in quality control, which is under the production department.

Packaging control is divided into three functions: 1. Control of fill weights, 2. control of packaging specifications, and 3. control of product specs.

In the latter, length and radius of curvature of short goods (macaroni and noodles) are constantly gaged by extruder operators against standards, and random checks are performed weekly by the QC department. These measurements, which are controlled within a rigid tolerance range, are extremely important because shape and size of the product have a pronounced effect on filling accuracy.

For the same reason, incoming shipments of packages are sampled for uniformity of weight. Overweight cartons not only represent a source of loss to the supplier, but can throw fill weights considerably out of line. If a significant percentage of these containers is found in any lot, the tare weights on the automatic weighing machines are adjusted accordingly.

In the final analysis, though, these measures are only supplementary to the main job—line control.

This program, started in 1950, involves primarily the education of line personnel, maintenance mechanics, and supervisors in the value of rou-

← For more data, circle this page number on card at back

New lower-cost "dripless" can perfect for edible oils...

Canco's **ACCU-POR** container

At last — a container that's just right for edible oils and many other liquid food products . . . a can that offers the user new convenience and neatness . . . a package that gives your product an important sales "extra" at lowest cost!

The Accu-Por container pours freely, accurately, yet won't drip a drop when righted. It is easy to handle, can't break, is light in weight. Because your label is lithographed all around the container, it has great eye-appeal! And remember: Canco offers brilliant metallic finishes . . . precision, full-color lithography.

Accu-Por containers are available in 16-oz. and 32-oz. sizes, priced as much as 25% below comparable cans.

Ask the Canco packaging expert today for further information about this remarkable all-metal container!

COME TO CANCO FIRST!

American Can Company

New York • Chicago • San Francisco

For more data, circle this page number on card at back →

everything you sell
deserves the protection of

WAXED
GLASSINE

Perfect protective packaging invites identification, will travel!

More Sales Power Per Package ...with Waxed Glassine

Solves tough sales-wrap puzzles as it cuts your costs! Packagers agree Waxed Glassine emphasizes product quality, assures maximum consumer convenience, stimulates more sales by brand!

THE POWER OF WAXED GLASSINE OUTER WRAPS:

- **More eye appeal**—Sparkling surface provides perfect background for brilliant, appetizing illustrations, lets you use entire package for powerful all-over sales-winning designs that prompt purchase!
- **Billboards your brand**—Every package is a *billboard* generating impulse sales and assuring repeat customers with its fresh, inviting look, strong appetite appeal and stand-out brand identification!

INNER AND OUTER WRAPS OF WAXED GLASSINE:

- **Extra flavor protection**—Safely seals in all that desirable just-made goodness, keeps customers coming back for more.
- **Extra freshness protection**—Self-sealing Waxed Glassine protects against moisture invasion, maintains freshness and texture best for longer shelf and pantry life. Easier to open, easier to reclose, contents keep fresh and tasty!
- **Extra grease protection**—Waxed Glassine wrappers resist penetration by fats, oils, shortenings. No more rancidity problems! Package stays clean, inviting, colorful!
- **Extra strength**—Waxed Glassine passes rugged test of delivery. in-store and consumer handling! Made stronger to stack better, it cuts down crumbling, breakage, ripped wrappers and returns!
- **Low cost**—Lower basic costs plus constant, dependable supply combine to produce an economical package that reaches out and sells!

Waxed Glassine teams up with the experience, facilities and service of the nation's top converters, to give you modern packaging and product protection that pays off in bigger packaging business—and the job doesn't stop here!

Traffic-stopping *designs*, actual *samples*, proven *sales ideas*, complete *cost sheets* show how Waxed Glassine pays off in better packaging, higher brand profits! See your Waxed Paper salesman, or write or telephone us direct.

W
PROTECTS FRESHNESS AND FLAVOR
P

WAXED PAPER MERCHANDISING COUNCIL, INC. • *38 South Dearborn St.* • *Chicago 3, Ill.* • *Telephone: STate 2-8115*

fine sampling and check weighing to stop wild fluctuations in weights.

At Mueller, long goods (spaghetti products) are filled by hand, short goods by automatic weighing and filling machines. Thus, each product necessitates a different type of control program.

Line-Checks Catch Errors

On the long-goods lines, women weigh product into special hoppers on over-under scales, then place the product into pocketed conveyors, where they are packaged and cased mechanically.

Analysis of test check-weighings shows that hourly sampling intervals are adequate to catch most filling variations. Therefore, supervisors remove a whole case from each packing line every hour and check the weight of each package, noting the variations from correct weight on a special form.

The daily reports are tabulated and summarized for the production manager. In addition, the QC department draws samples about four times a day as a check on the supervisors' reports.

Short goods are checked much more frequently, because of the speed of the operation. Here, women scale operators remove five consecutive packages from each scale

For a detailed check list of package development pointers, see pp. 112-113.

pocket and check weigh them. After the entire scale has been sampled pocket by pocket, the procedure is repeated. Thus, each scale is completely checked at least four times per hour.

From statistical studies it has been determined that the operator need make no adjustment to the scale unless variations in each pocket group falls outside a certain range. Variations within the range are due to chance and cannot be eliminated.

If any scale needs adjustment more than twice an hour, the mechanic is called in. If he cannot repair the situation, normal sampling procedures are suspended and the offending pocket is subjected to 100% inspection.

Scale reports are checked daily by the QC department, which also samples each line itself twice a shift.

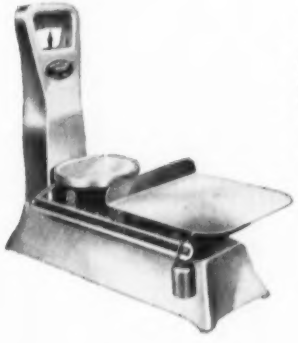
As a final check on weights, weekly samples are drawn by QC and plotted on a histogram—a graphic rectangular representation of frequency distribution. This visual chart is submitted to top management to keep them informed on control efficiency.

At Florida Frozen Food Processors . . .

EXACT WEIGHT SCALES

assure top packing speed

Leading seafood packers, like Florida Frozen Food Processors of Miami, are finding the speed and accuracy needed for fast production packing in Exact Weight Scales. These precision scales are extremely sensitive to the finest degree for close weight tolerance, yet simple to operate and give dependable service. The easy-to-read dial of Model 273, above, provides 1 inch indicator travel equivalent to 2 ounces over or under established weight. Scales are specially anodized to resist corrosion. Write for complete information.



Exact Weight Scales are available in capacities for packaging units of any size or weight. Model 213, left, has 3-pound capacity with one inch indicator travel equivalent to one ounce over and under. There is a type and model available for almost every precision weighing job.

Sales and Service Coast to Coast

Find us in your local 'Yellow Pages'

THE EXACT WEIGHT SCALE CO.
910 W. FIFTH AVE., COLUMBUS 8, OHIO
In Canada: P.O. Box 179, Station S, Toronto 18, Ont.

Exact Weight SCALES

BETTER QUALITY CONTROL . . . BETTER COST CONTROL

For more data, circle this page number on card at back →

PACKAGING CHECK LIST

Management guide to better containers

HOW TO USE THIS CHART

Factors pertinent to the development of any new package are listed under the appropriate headings in the center column below. Company departments concerned with each of these points are indicated by dots (right). Space at left is for you to check those points that apply to your product.

MANAGEMENT: Board of Directors, Owners, General Executives, President, Vice Presidents, Secretary, Treasurer, Comptroller.
PRODUCTION: Plant Manager, Production Superintendent, Works Executives, Chief Engineer, Engineers, Foremen, Production Assistants, Control Laboratory.
RESEARCH AND DEVELOPMENT: Research Director, Chief Chemist, Food Technologist, Home Economist, Technical Librarian, Technical Assistants, Packaging Laboratory, Pilot Plant.
SALES AND ADVERTISING: Sales and Advertising (including Merchandising and Public Relations) Executives and Assistants.
PURCHASING: Purchasing Executives and Assistants. **LEGAL:** Attorneys and Assistants.

YOUR use		MANAGEMENT	PRODUCTION	RESEARCH & DEVELOPMENT	SALES	ADVERTISING	PURCHASING	LEGAL
	I. WHY A NEW PACKAGE?							
	For a new product?	●	●	●	●	●	●	●
	For an established product?	●	●	●	●	●	●	●
	1. To improve protective functions which will:							
	Extend shelf-life	●		●	●			
	Protect product so package is:	●		●	●			
	Air-tight (hermetic)			●				
	Water/water-vapor resistant			●				
	Impermeable to gases and organic vapors			●				
	Sift-proof			●				
	Permeable (allowing for "breathing")			●				
	Insect and dust-proof			●				
	Light resistant			●				
	Protect from damage in handling	●		●	●			
	Protect package from product damaging	●		●	●			
	Grease resistant	●		●				
	Non-sticking	●		●				
	2. To strengthen sales appeal by —							
	New designs	●			●	●		
	Visibility	●			●	●		
	Colors	●			●	●		
	Raw materials	●			●	●		
	Family and/or brand identification	●			●	●		
	Legible, attractive type	●			●	●		
	Novelty	●			●	●		
	Good typographical layout	●			●	●		
	Shelf-display features	●			●	●		
	Simplicity	●			●	●		
	Quick recognition	●			●	●		
	Good use of selling space	●			●	●		
	Ease of handling	●	●	●	●	●		
	Shape	●	●	●	●	●		
	Size	●	●	●	●	●		
	Closures	●	●	●	●	●		
	Enclosures	●	●	●	●	●		
	Size of opening	●	●	●	●	●		
	Dealer and consumer acceptance	●			●	●		
	3. To meet changes in retail methods and outlets	●			●			
	4. To reduce costs (unit cost per package and amount of returned goods)	●	●	●	●	●		
	5. To step-up production — meet consumer demands	●	●		●			
	6. To take advantage of new developments in packaging technics	●	●	●				
	7. To meet competition	●	●	●	●	●		
	8. To meet changes in consumer requirements and buying habits	●			●	●		

YOUR use		MANAGEMENT	PRODUCTION	RESEARCH & DEVELOPMENT	SALES	ADVERTISING	PURCHASING	LEGAL
	IV. RESEARCH AND DEVELOPMENT (CONT'D)							
	Water-vapor transmission, Hygroscopicity			●				
	Gas permeability			●				
	Water and oil absorption			●				
	Opacity			●				
	Brightness of paper			●				
	Acid-alkali resistance			●				
	Light resistance			●				
	Performance under extreme temperatures (hot filling, freezing)			●				
	Flammability			●				
	Inks and adhesives			●				
	Free from foreign odors			●				
	Printability of material			●				
	3. Fabrication of sample packages			●				
	4. Testing for performance			●	●			
	Storage, shipping and distribution tests			●				
	Laboratory storage tests under accelerated conditions							
	Simulating storage, distribution and merchandising conditions			●	●			
	Actual field tests (shipping and storage)			●	●			
	5. Taste panel testing of packaged product (organoleptic evaluation)	●	●	●	●	●	●	●
	Feel	●	●	●	●	●	●	●
	Mastication	●	●	●	●	●	●	●
	Texture	●	●	●	●	●	●	●
	Color	●	●	●	●	●	●	●
	Aroma	●	●	●	●	●	●	●
	After-taste	●	●	●	●	●	●	●
	Odor	●	●	●	●	●	●	●
	Taste	●	●	●	●	●	●	●
	General appearance	●	●	●	●	●	●	●
	ENGINEERING, PRODUCTION							
	1. Fitting package into production line:		●	●	●	●	●	
	What net production rate is needed (allowing minimum shut-down time)? Will present plant machinery adequately handle new package?		●					
	If so, how can existing line be most simply converted? Can operation be simplified without sacrificing package protective features?		●	●				
	If not, is machinery being made commercially to do the job? Can company engineers or development engineering concerns build necessary machinery?		●				●	
	How many machines are needed?		●					
	What floor space will be required?		●					
	Is line as automatic and continuous as possible and free from "bottlenecks?"		●					
	Can machinery be adapted to similar packages, also packages of different sizes?		●					
	Labor costs?		●					
	2. Production tests:		●	●				
	Plant or pilot runs under actual operating conditions		●	●				
	Adequate quantities run to determine: Costs, also —	●	●				●	

YOUR use		MANAGEMENT	PRODUCTION	RESEARCH & DEVELOPMENT	SALES	ADVERTISING	PURCHASING	LEGAL
	II. SOURCES OF IDEAS FOR NEW OR REVISED PACKAGES							
	Customer requests	●			●			
	Salesmen's suggestions	●			●			
	Competitive packages	●		●	●			
	Packaging consultants	●		●				
	Packaging suppliers	●		●				
	Trade publications	●		●				
	Trade associations	●		●				
	Packaging exhibits	●		●				
	Packaging courses	●		●				
	III. PACKAGING MATERIALS							
	Paper			●				
	Paperboard			●				
	Corrugated and solid fiber			●				
	Metal			●				
	Glass			●				
	Plastic			●				
	Cellophane			●				
	Laminations			●				
	Coatings			●				
	Waxes			●				
	Foil			●				
	Textiles			●				
	Wood			●				
	Closures			●				
	Adhesives			●				
	Inks			●				
	Labels			●				
	Decorations			●				
	Special features			●				

YOUR use		MANAGEMENT	PRODUCTION	RESEARCH & DEVELOPMENT	SALES	ADVERTISING	PURCHASING	LEGAL
	That there are no "bugs" in operations		●	●				
	Adequate quantities run to determine: Speed, also —		●				●	
	Will machinery run new package at speed of old package?		●					
	If not, what speed can be attained?		●					
	Will speed of machinery have to be reduced?		●					
	Will speed of machinery have to be increased?		●					
	Will speed of machinery have to be changed?		●					
	Will speed of machinery have to be changed frequently?		●					
	Will speed of machinery have to be changed infrequently?		●					
	Will speed of machinery have to be changed rarely?		●					
	Will speed of machinery have to be changed never?		●					
	Will speed of machinery have to be changed always?		●					
	Will speed of machinery have to be changed sometimes?		●					
	Will speed of machinery have to be changed occasionally

	M	PD	E	S	A	PU	L
II. SOURCES OF IDEAS FOR NEW OR REVISED PACKAGES							
Have you thoroughly explored all these idea sources?	●						
1. Research & Development personnel	●		●				
2. Engineering, Production & Operation personnel	●	●					
3. Sales, Advertising & Merchandising staffs (including Field Sales force, Consumer Service studies, advertising agencies and opinion surveys of wholesalers, retailers and consumers)	●			●	●		
4. Purchasing staff	●					●	
5. Company suggestion-box program	●	●	●	●	●	●	●
6. Manufacturers of packaging materials and equipment		●	●			●	
7. Packaging consultants and designers	●	●	●	●	●		
8. Packaging conventions and expositions	●	●	●			●	
9. Technical and trade literature	●	●	●	●	●	●	●
10. Competitor's packages	●	●	●	●	●		
11. Packages of foreign manufacturers	●	●	●	●			
12. Patents	●	●	●				●
III. EVALUATING IDEAS FOR NEW PACKAGES							
1. Is there any reason why this new package cannot be considered from a production standpoint? Does the package have to be designed to fit in with present operation? What production schedule is contemplated?	●	●					
2. Is there any reason why this new package cannot be considered from sales, management or company viewpoints?	●			●	●		
3. Does proposed package hold every promise of proving practicable? If not, are there any other packages to be considered?	●	●	●	●	●	●	●
4. What is planned maximum shelf-life?	●		●	●			
5. Where will package be sold? (regionally and type of distribution)	●			●			
6. What packaging research would be required? Cost?	●	●	●	●	●		
7. What prospective development is necessary? Cost?	●	●	●	●	●		
8. Would any unusual production problems be involved?	●	●					
9. Are any unusual legal or patent problems involved?	●						●
10. Are required packaging materials and machinery available?	●					●	
11. What are preliminary estimates of package cost?	●	●					
Distribution costs?	●			●	●		
Profit margins?	●	●		●	●	●	
12. Will package lend itself to efficient materials handling (palletization, unit loads)?	●	●					
IV. RESEARCH AND DEVELOPMENT							
LABORATORY							
What are the protective requirements of the product?			●				
1. Product packaging tests			●				
Moisture equilibrium			●				
Free oil			●				
Caking (moisture and temperature)			●				
Flavor and odor retention			●				
Abrasive quality			●				
Chemical inertness			●				
Free-flowing properties			●				
Sifting properties			●				
2. Testing for physical properties of packaging materials			●				
Degree of flexibility and rigidity			●				
Tensile strength			●				
Bursting strength			●				
Wet strength			●				
Tear strength			●				
Thickness			●				
Folding endurance			●				
Smoothness			●				
Stuffing resistance			●				
Blocking characteristics			●				
Grease resistance			●				

(Continued in next column)

	M	PD	E	S	A	PU	L
That there are no "bugs" in operations		●	●				
That package from production line fulfills:							
Laboratory specifications		●	●				
Acceptance of consumer and dealer		●		●	●		
Sales and merchandising features		●		●	●		
Legal requirements (as in amount of fill variations)							●
Field tests (shipping and distribution) Tests on machine-packed samples (comparison with laboratory field tests)		●					
V. MERCHANDISING AND MARKETING							
Sales and Advertising							
1. Design and ease of handling		●		●	●		
Is the size right (proper unit of purchase both for consumer and to meet competition)?				●	●		
Does the package, size, and shape lend itself to good materials handling (for warehouser and retailer)?		●		●	●		
What will be the channels of merchandising? Where and how should package be marketed?				●	●		
Does package lend itself to window and counter displays?				●	●		
Will package be introduced at a psychological time to stimulate sales?				●	●		
Does package have "salability?"				●	●		
Does design permit code dating (if desired)?		●	●	●	●		
What designs are used by competitors?				●	●		
Is design original, imaginative, distinctive, utilitarian, and in good taste?				●	●		
Does package connote cleanliness and freshness? Has it eye and appetite appeal?				●	●		
Is brand or family quickly identified?				●	●		
Has selling space on package been advantageously used?				●	●		
Is copy simple and convincing? Have practical recipes and instructions been included?				●	●		
Will this package tie in with other packages in your advertising program? Is it adaptable to planned merchandising methods?					●		
If design makes costly changes in packaging machinery necessary, will these changes meet new consumer buying habits so well that cost is warranted?					●		
Does design comply with laboratory specifications?			●	●	●		
2. Consumer and dealer acceptance				●	●		
Have you pre-tested sufficiently to determine what consumer and dealer want?				●	●		
Will package keep consumer goodwill and confidence?				●	●		
Does package meet changing buying habits and needs of consumer?				●	●		
Is package wholly convenient for housewife (opening, reclosing, and pouring devices)?				●	●		
Does it have re-use value?				●	●		
Does package contain practical kitchen preparation advice?				●	●		
Does copy adequately describe contents of package?				●	●		●
VI. LEGAL							
Are any of packaging materials under government control?							●
Does package meet municipal, state, and federal regulations?		●	●				●
Will package meet food labeling provisions (municipal, state and federal)?		●	●				●
Have you applied for package construction patents? Trademark registration? Copyright?							●
VII. PURCHASING							
Have packaging materials and equipment companies been contacted? Samples and costs?						●	
How does package correlate with inventory control? What are minimum inventory requirements for economic production?		●	●			●	
Have final materials and production specifications been drawn up — to meet needs of technical, production, and merchandising departments?		●	●	●	●	●	
Has purchasing department been fully informed of all required specifications needed to draw up exact, accurate purchase orders?		●	●	●	●	●	
Will supplies and machinery be delivered to meet production schedules?		●				●	
VIII. FINAL APPRAISAL — THE "COMPROMISE"							
Will package increase costs? If so, is increase justified?	●	●	●	●	●	●	
If costs must be reduced, where will the sacrifice be made?	●	●	●	●	●	●	
1. In design? Is design simplest one to give desired results?	●			●	●		
2. In production line? Can package be adapted to a more flexible, automatic, continuous packaging line?	●	●					
3. In protective features? Is there overpackaging?	●		●				
In final analysis, are you satisfied with your "compromise" package?	●	●	●	●	●	●	●

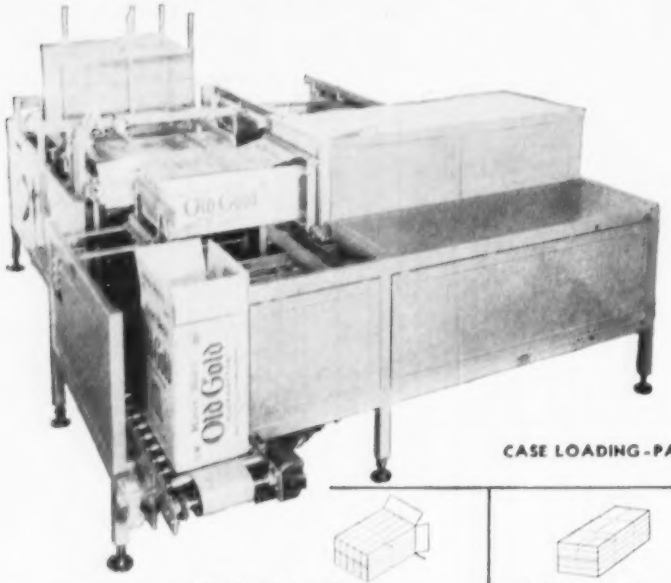
Large wall-size reprints of this handy check-sheet are available at 50 cents for single copies, 30 cents each for orders over twenty-five.

More in demand than when developed in 1949, this FE Check List, reverified, is reprinted as a service to readers.—Editors

Which Packomatic solves your production line problem?

T.M. Reg. U. S. Pat. Off.

PACKOMATIC Feeder-Former-Positioner-Loader-Upender



Require a fully automatic case loader?

Here's a fully automatic case Feeder-Former-Positioner-Loader that is breaking records on actual production line conditions in a variety of industries. And by end-loading techniques, savings on paper board alone run as high as 28%. Production jumps dramatically with this high-speed, continuous-motion machine. Labor costs are lower, too, because except for hand-stacking corrugated shipping containers in flat form into the magazine, everything's automatic. Below are some of the end-loading patterns showing number and packing of cartons. Check with Packomatic engineers if your loading pattern does not appear here. Custom-engineering will produce a Packomatic for your product.

CASE LOADING-PATTERNS:

Twenty-four cartons in 12¼" x 10⅝" x 8½" case

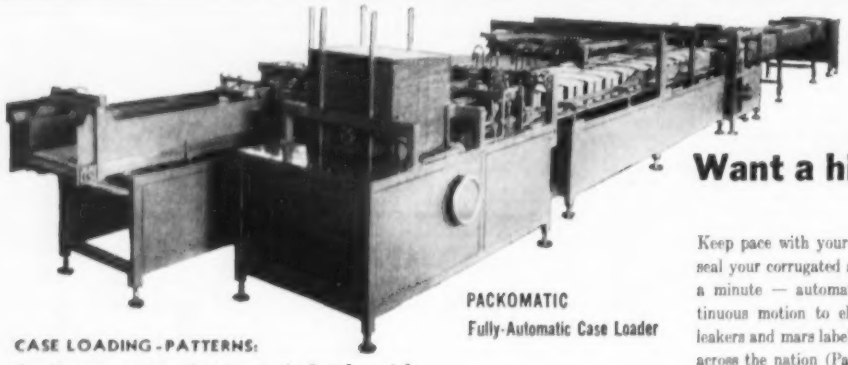
Eighteen 7 & 8 oz. cartons in 20" x 14⅛" x 8⅛" case

Sixty cigarette cartons
King Size: 17⅞" x 11½" x 22"
Regular: 14-13/16" x 11½" x 22"

Thirty 1 lb. cartons in 16⅛" x 10⅝" x 7¼" case

Twenty-four cartons in 19½" x 10⅞" x 7" case

Forty-eight cartons in 22¾" x 23½" x 15⅞" case



PACKOMATIC
Fully-Automatic Case Loader

Want a high speed can line?

CASE LOADING-PATTERNS:

handles any can from the 12 oz. to the 5-qt. Imperial

Six 5-qt. cans or gallon cans in 20 ⅛" x 13⅝" x 9 13/16" case and 20 ¼" x 13¾" x 8¼" case.

Twelve 46 oz. cans in 21" x 13" x 7⅛" case

Twenty four 12 oz. cans in 16⅛" x 10-5/16" x 5¹⁵/₁₆" case

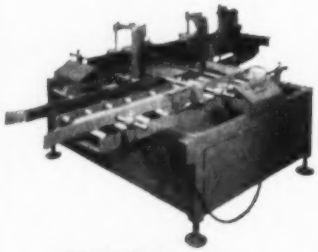
Six No. 10 cans in 22¹/₁₆" x 17⅛" x 7⅛" case

Keep pace with your production line. Now, feed-form-position-load and seal your corrugated shipping containers at high-speeds — up to 720 cans a minute — automatically. This is accomplished with a smooth continuous motion to eliminate jarring and bumping of cans that causes leakers and mars labels or lithographing. Machines in successful operation across the nation (Packomatic was **first** with a successful production-line machine) end-load a variety of can sizes — from six 5-quart cans to twenty-four 12-oz. cans — in such patterns shown at left. End-loading reduces paper board costs. Automation saves labor costs. From corrugated flats to sealed containers, only one part-time attendant is required. Consider this time-money saver for your plant. We can custom-engineer a machine like this for you.

PACKOMATIC Automatic Case Sealer

Like to seal automatically?

Here's the machine for you — the **first** fully automatic case sealer proven under actual production line conditions. No operator needed to align corrugated cases, open flaps, glue, seal and discharge ready for shipment. Adjustable to a wide range of case sizes. Similar models, available semi-automatic.



PACKOMATIC 4-Side Case Imprinter with serial numbering device.

Need 4-Side Imprinting

Prints either or both sides and ends of corrugated shipping containers with name and contents — in addition to imprinting a serial number. Very essential if using modern palletizing methods. The only machine of its kind. Other regular models available for minimum case imprinting requirements. Write for specs and prices.

J. L. FERGUSON COMPANY Joliet 10, Illinois

NEW YORK, CHICAGO, CLEVELAND, BOSTON, TAMPA, BALTIMORE, PORTLAND, DENVER, LOS ANGELES, SAN FRANCISCO, SEATTLE, NEW ORLEANS, LOUISVILLE, KANSAS CITY AND ALL PRINCIPAL CANADIAN CITIES.

New way to control Rancidification!

Antioxidant-impregnated cartons and wrappers protect flavor and aroma

Ionol, C.P. is an effective food-grade antioxidant. Impregnate boxboard and paper with it, and you protect aroma and flavor by preventing oxygen attack on fats right where it starts—at the surface of cartons and wrappers.

In actual tests, baked goods were stored at 85° F in Ionol, C.P.-impregnated boxboard cartons, which were found to be free of rancidity at the end of ninety days. Without Ionol, C.P. protection, packages of baked goods stored under similar conditions often develop rancidity within a week.

You can insure long shelf life and protection of your brand label's good name by asking for packaging materials containing Ionol, C.P. antioxidant. Write to Shell Chemical for names of suppliers of new Ionol, C.P.-impregnated packaging.

SHELL CHEMICAL CORPORATION

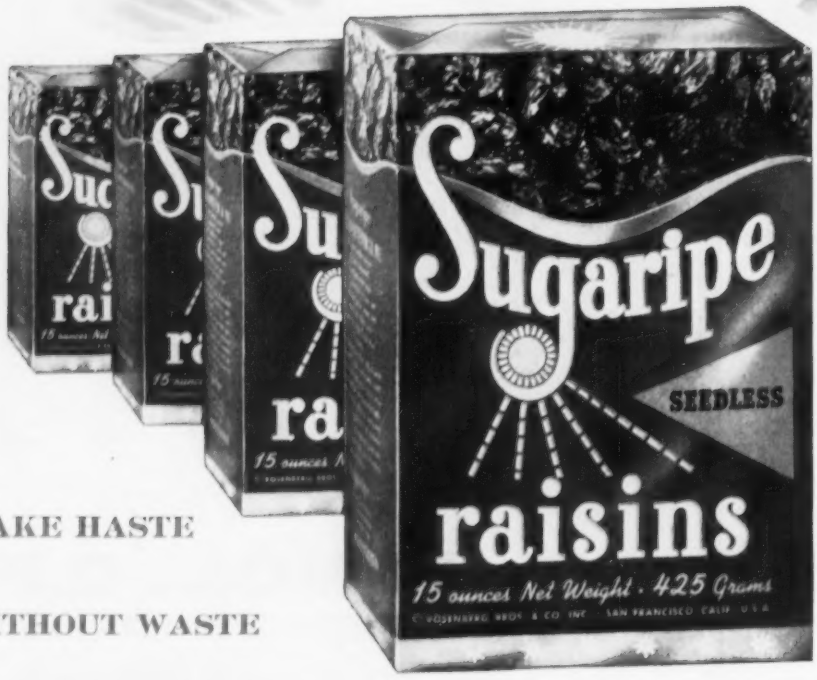
CHEMICAL SALES DIVISION, 380 Madison Avenue, New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver

SHELL

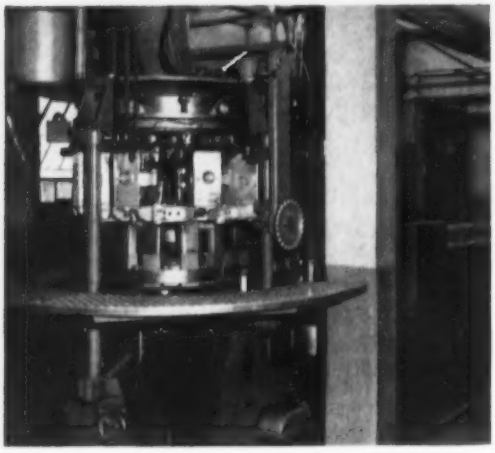
For more data, circle this page number on card at back →

A SURE WEIGH...



TO MAKE HASTE

WITHOUT WASTE



Installation of Pneumatic's Small Velocitron machine in production of Sugaripe raisin packages.

Each and every overweight package that goes out of a plant takes money out of the producer's pocket. Yet it is safe to say that millions of dollars are given away yearly in this fashion. Underweights invite damaging criticism. A great deal of this *can* be avoided, by better packaging methods.

Shining example in the fruit field is Sugaripe raisins. This product of Rosenberg Bros. & Co. of San Francisco is packed with a high degree of accuracy and uniformity at speeds up to 180 packages per minute. It is packaged on Pneumatic Velocitron equipment which employs net weighing, rather than the less dependable volumetric method.

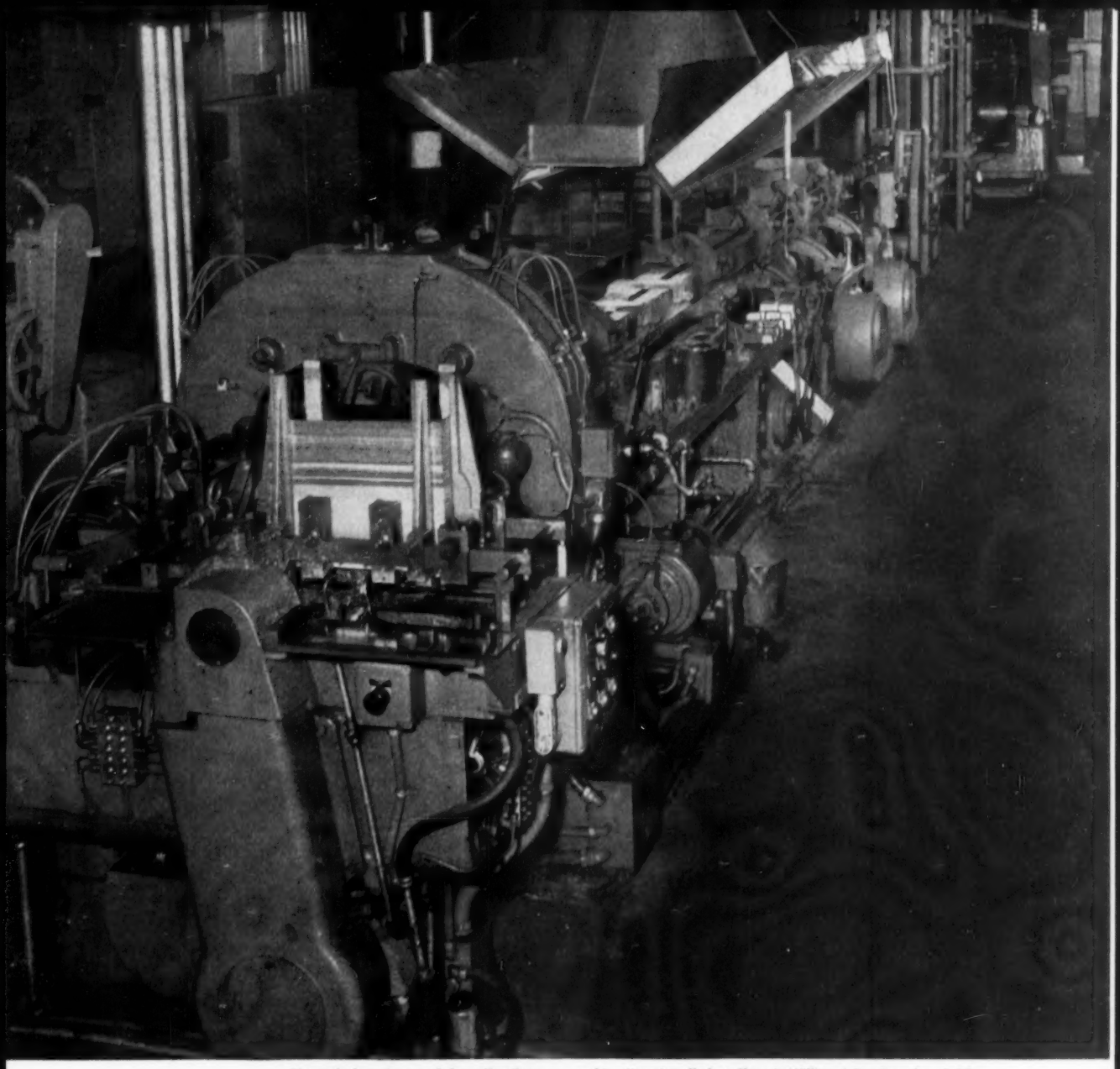
Velocitron feeds and sets up the cartons, bottom seals and fills them — *with fractional ounce accuracy* — then top closes them to complete the job. Eight Pneumatron weighing heads measure exact weight of goods by a new "air pressure" principle — an innovation which produces the best net yet. Costly overweights and critical underweights are eliminated!

Advanced design and "lower cost per container" operation are Pneumatic trademarks — good guides to good buying when you're in the market for packaging or bottling equipment.

PNEUMATIC SCALE CORP., LTD., 91 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delaware & Williams Company, Ltd., Toronto.

PNEUMATIC ***Packaging and Bottling Equipment***

← For more data, circle this page number on card at back



Pictured above is one of three Hamilton can machine lines installed at Sherwin-Williams' San Leandro, Calif., can making plant. This line includes a new Hamilton 501 bodymaker, flanger, duplex slitter and tester.

The Hamilton 501 bodymaker is extremely versatile—capable of handling cans up to 404 x 510

The new Hamilton 501 bodymaker is one of the most versatile high speed machines in its field—adjustments can be made readily to produce cans from 202 x 202 to 404 x 510 sizes. And high speeds can be maintained even in making the larger can sizes.

The Sherwin-Williams Co. is one of the can makers to recently install Hamilton 501 bodymakers and related Hamilton can machinery. Two Hamilton 501 lines are helping Sherwin-Williams manufacture a portion of its own can requirements, as well as supplying the package needs of other firms in the oil and paint industry.

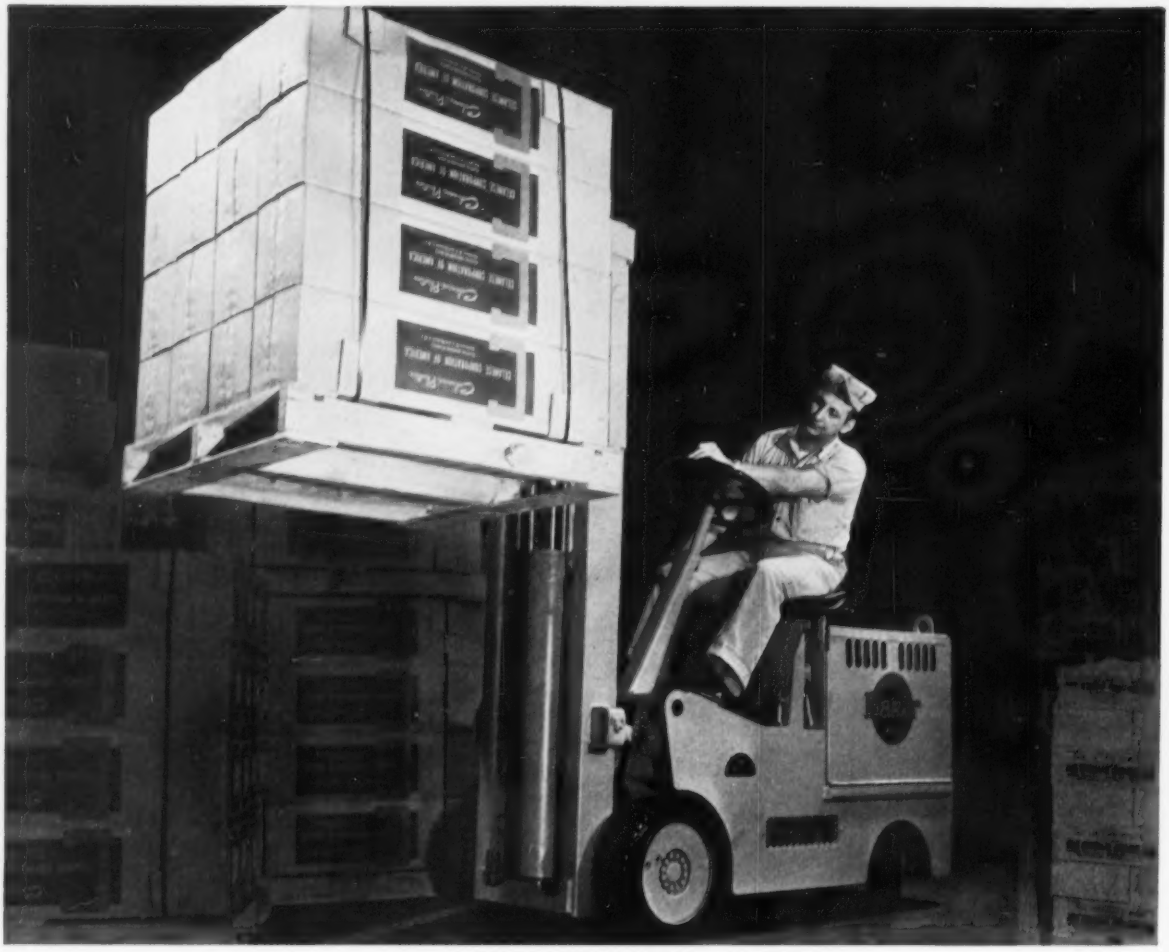
Write today for complete details, including specifications, of the new Hamilton 501 bodymaker.

Hamilton Division Hamilton, Ohio

BALDWIN · LIMA · HAMILTON

Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools

BALDWIN BLH LIMA-HAMILTON



Maneuverable BAKER "FT" Electric Trucks have lower silhouette, greater stability!

• Ability to maneuver safely and quickly in narrow aisles and tight places with large, heavy loads means more and faster work from new Baker "FT" electric trucks. Contributing factors are less overhang, lighter weight, lower silhouette, greater stability, shorter turning radius and greater forward tilt.

These new trucks have many other features for safe, more efficient operation. More convenient controls – right where operator wants them – are easy and simple to actuate. Absence of cowl and other obstructions means better visibility, greater ease in mounting and dismounting from either side. Dynamic braking means greater safety on ramps, smoother stops, more protection for truck and load. Self-energizing, self-equalizing hydraulic foot brakes and separate parking brake linked to driver's seat give added safety.

Capacities to 6000 pounds. Write for specific bulletins.

Baker®
industrial trucks

THE BAKER-RAULANG COMPANY
1277 WEST 80th STREET • CLEVELAND 2, OHIO
A Subsidiary of Otis Elevator Company

6E-4

Packaging is more than "Skin Deep"!

Packaging Problem:

The Williamson Candy Company of Chicago, Illinois was faced with a serious packaging problem. Their "Oh Henry" candy bar was using a wrapper that required an adhesive seal. Transfer of the adhesive not only caused the bars to stick together in shipping cartons, but, in vending machines, the bars were coming unwrapped and vending machine operators were registering complaints.

In addition, the natural shape of the "Oh Henry" bar had a tendency to cause the adhesive to smear on the elevators and carriers of wrapping machines resulting in costly slow-downs and rejections.

Solution:

Western-Waxide's research scientists and food technologists, after a thorough study of the problem, developed the first heat sealed wrapper of this type for a chocolate candy bar. Heat sealing solved the adhesive problem . . . but, the wrapper had to be heat sealable at low temperatures and high speeds. Otherwise, the chocolate would melt.

They developed a special wrap of 8 lb. tissue laminated with special wax formula No. 1577LM to 25 lb. glassine. This wrap provided a positive fold, with no "spring back". The special wax formula provided lower moisture-vapor transfer, was heat sealable at a low temperature, yet could be wrapped and sealed on a Lynch Wrap-O-Matic machine at the rate of over 100 per minute. To add extra high gloss to the brown, yellow and red printed wrapper, the surface was over-coated with clear lacquer.

●

Western-Waxide package research and development turns problems *into* profits *for* you! *These services of our packaging research and development laboratories and personnel are available to solve your packaging problems. Write or phone your nearest Western-Waxide office today.*

Increased Sales
... by Design!

CROWN ZELLERBACH CORPORATION

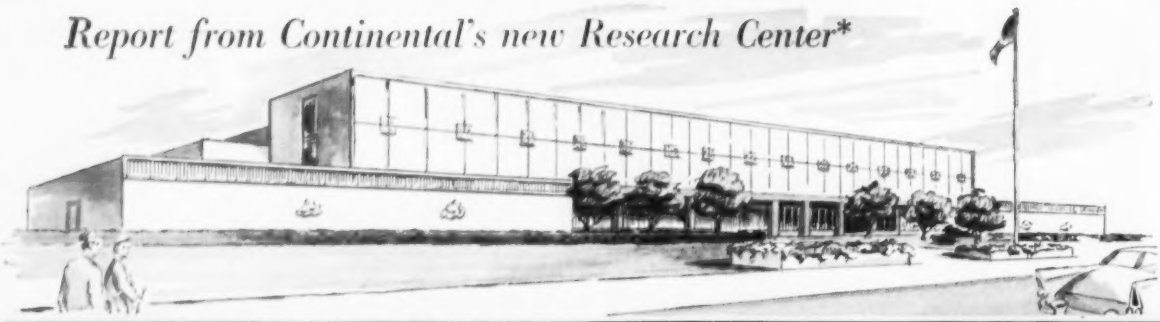
WESTERN-WAXIDE SPECIALTY PACKAGING DIVISION

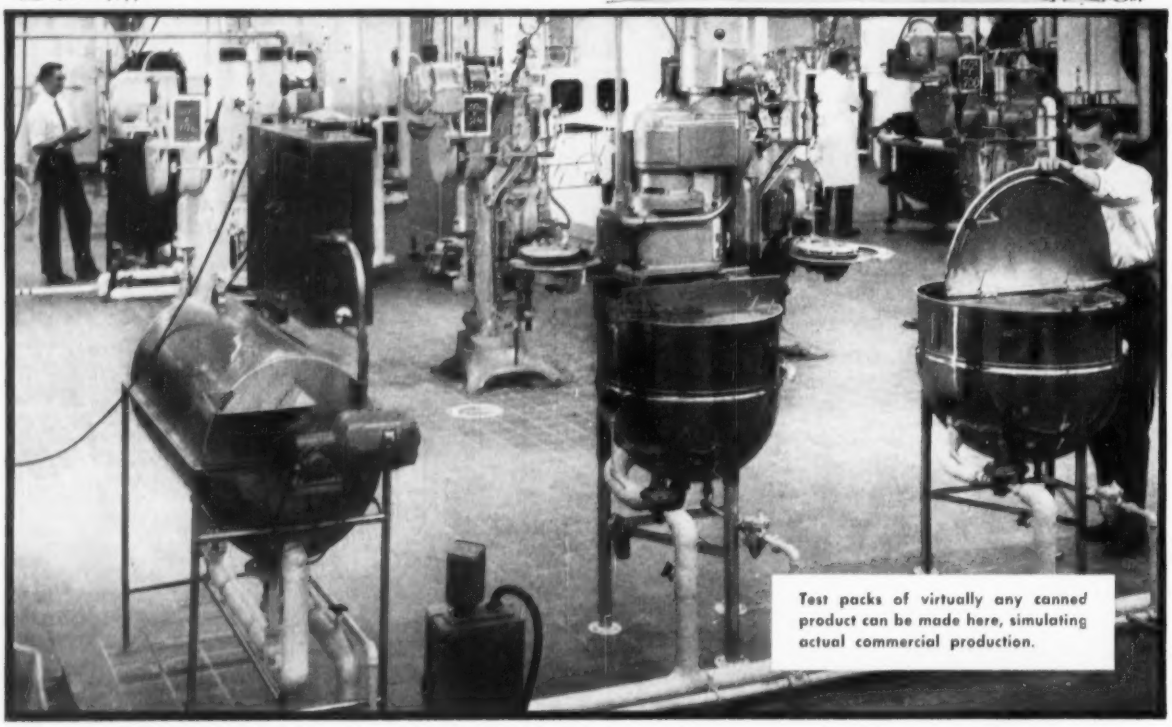
PLANTS AND SALES OFFICES: SAN LEANDRO AND LOS ANGELES, CALIFORNIA • NORTH PORTLAND, OREGON • ST. LOUIS AND KANSAS CITY, MISSOURI

SALES SERVICE OFFICES: Akron • Atlanta • Chicago • Cincinnati • Dallas • Denver • Memphis • New York City • Omaha • Salt Lake City • Seattle • Spokane

For more data, circle this page number on card at back →

*Report from Continental's new Research Center**





Test packs of virtually any canned product can be made here, simulating actual commercial production.

TEST PACKING SOLVES PROCESSING AND PACKAGING PROBLEMS *BEFORE* THEY HAPPEN

What does Continental Can Company know about *your* packaging and processing problems? Quite a bit. In fact in many cases we get the "kinks" out of your packaging and processing operation before you even know they exist.

At Continental's fabulous research & development center, a huge pilot area is equipped to duplicate actual commercial production of any product made — from soup to nuts — every step of the way. So our recommendations to you are based on solid experience, not merely hypotheses.

Take soft drinks for example. Our engineers tested many compositions of metal before developing a can with the necessary strength for high carbonation, plus a protective enamel lining. Liquid detergents needed special experiment too, until Continental produced a sturdy, non-corrosive can that could be easily marketed.

This pre-testing research can help you too. If you're a Continental customer . . . or would like to be, call your nearest Continental representative. Our experts and engineers are eager to help you solve your packaging and processing problems.

QUALITY Continental SERVICE

CONTINENTAL CAN COMPANY

***TOP AWARD WINNER**

For the excellence of its modern, scientific design, Continental's new $7,500,000 Chicago research center has won the honor award of the American Institute of Architects and the Chicago Association of Commerce and Industry.

Eastern Division: 100 E. 42nd St., New York 17 • Central Division: 135 So. La Salle St., Chicago 3 • Pacific Division: Russ Building, San Francisco 4

What Research Means to American Business

American industry plans to invest $150 billion in new plant and equipment during the next four years—more than in the five years 1952-1956. It plans to carry out this record investment even though manufacturing capacity has nearly doubled since World War II. These facts are reported in McGraw-Hill's tenth annual survey of Business' Plans for New Plants and Equipment. They contradict many long-established theories about investment in capital goods.

According to the textbooks, a high and rising level of capital investment is generally followed by a decline. The bigger the rise—so the old theory goes—the bigger the decline will be. But, after a decade of high-level investment and an especially strong rise in the past two years, industry now has plans to keep right on with near-record outlays for plant and equipment. Does this mean some new factor has been added, to change the investment cycle?

The New Factor—Research

The latest McGraw-Hill survey points out one new factor which, more than any other, is changing the nature of the investment process. This is the record outlay planned by U.S. corporations for **scientific research and development**—to create new products and develop new industrial processes. The rapid growth of research in industry, and plans for even more remarkable growth in the years ahead, are shown by the accompanying table.

This year industry plans to spend $7 billion on research and development—up 20% from 1956. By 1960 it will spend $9 billion—enough to create a major new industry.

By 1960 manufacturing industry expects sales to be up 26%—with half the increase in products that were not made in 1956.

Growth of Research and Development Expenditures

(Millions of Dollars)

			PLANNED	
	1955	1956	1957	1960
Machinery	408	506	577	704
Electrical Equipment	950	1,149	1,310	1,637
Aircraft and Parts	1,038	1,558	2,274	3,161
Fabricated Metal Products and Ordnance	134	165	174	210
Professional and Scientific Instruments	185	252	300	453
Chemicals	440	498	528	617
Paper, Rubber, Stone, Clay and Glass Products	149	174	196	233
Petroleum Products	171	205	225	277
Other Manufacturing	1,038	1,279	1,388	1,557
Non-manufacturing industries	254	310	347	419
ALL INDUSTRIES	4,767	6,096	7,319	9,269

What Research Is Doing

Here are some examples of how industrial research is opening up new markets, or compelling the modernization of old facilities:

New automatic controls in petroleum refining will raise the quality of gasoline and reduce the time required for production. A new process for recovering oil from depleted wells promises to multiply our potential reserves.

A new process for treating iron ore will permit the ore to be fed directly into steel furnaces—without the need for blast furnaces or coke ovens.

New turbine engines—made possible by the development of heat-resistant alloys for turbine parts—offer greatly increased power for aircraft, ships and automobiles.

Altogether, industry plans to introduce more new products in 1957-1960 than in any previous four-year period. It also plans new processes on a scale that will make much of our present capacity obsolete. These new products and new processes are the secret behind continuing plans for high investment.

One-third of all manufacturing firms are building new plants this year to produce new products, and by 1960 this may account for 10% to 20% of all capital expenditures. At the same time, manufacturing companies report that over half their capital expenditures in the next four years will be for modernization of equipment and introduction of new processes. Thus the preponderant share of new investment will be based on developments growing out of research.

A New Kind of Prosperity

The keen interest of U. S. business firms in scientific research points the way to a new kind of prosperity for our economy—a prosperity based on deliberate creativeness. As long as we can create new products that will offer better value to consumers or cut costs to manufacturing firms, business will continue at a high level—not at fever pitch, perhaps, and it is to be hoped not at an inflationary pitch. But based on a steady stream of new products and processes, we can have a high level of general prosperity that defies the old laws of boom and bust.

It's Not Automatic

Of course, there is no guarantee. New products do not spring up by magic as the medieval alchemists hoped they would. They are found as the result of long and expensive effort in laboratories and pilot plants. This effort requires an increasing number of trained scientists and engineers. In 1957 alone, manufacturing companies report they will need 7% more of these highly trained people in research and development. And by 1960, they will need an additional 15% to carry out planned research programs.

The effort to maintain prosperity — as well as the national defense effort — will depend increasingly on this supply of scientific and technical personnel. But if we can supply the people, industry now has the plans for a research effort that will put an end to the spectre of idle plants and idle workers.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw

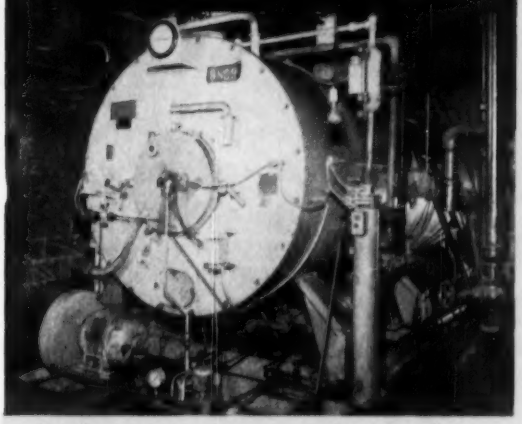
PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

STEAM GENERATING PROBLEMS SOLVED

. . . a report

by AMESTEAM GENERATOR

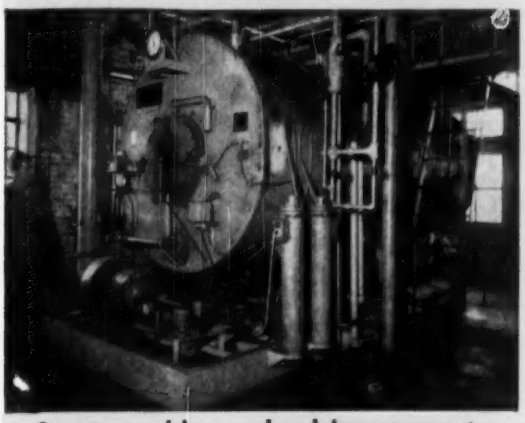


Food processing steam requirements from lowest demand days to full capacity easily handled by this AMESTEAM GENERATOR.

". . . most economical and trouble-free unit we have owned in our thirty years", writes J. J. Giammalvo about his AMESTEAM GENERATOR.

"...the boiler operates with a minimum of maintenance beyond opening and cleaning for annual inspection. It easily handles our steam requirements from the lowest demand days to full rating when our dryers and condensers are being used to capacity, operating faithfully, week after week, burning No. 6 fuel oil.

"This boiler, installed on January 5, 1951, has been by far the most economical and trouble-free unit we have owned in the thirty years we have been engaged in the manufacture of cheese and other dairy products . . ."

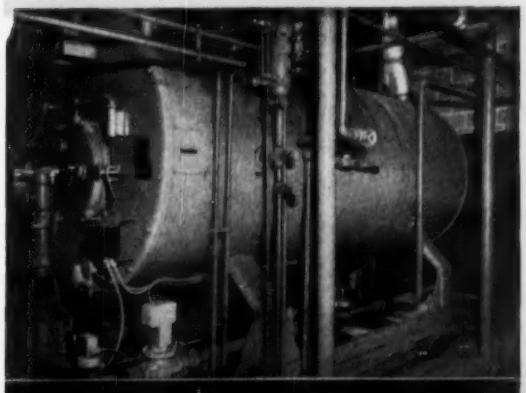


Space problem solved by compact AMESTEAM GENERATORS dependably serving large Pure Food Factory.

Food plant appreciates space savings, performance and service.

"Up to the time we purchased your AMESTEAM GENERATORS, we were users of coal", writes Erwin C. Meyer of "HANSA" Pure Food Factory, Mamaroneck, N.Y. "We needed new boilers, so the writer studied different makes of steam generators and finally decided on your generator because it was so compact and complete.

". . . the new AMESTEAM GENERATORS are in their new boiler house and we are well pleased with their performance. We require very little service from you. The service you rendered was prompt and very cordial. It was a pleasure and it is a pleasure to do business with your firm."



Space-saving, efficient AMESTEAM GENERATOR delivering dependable steam for Gates Rubber Company.

At Gates Rubber Company—"very reliable and entirely satisfactory".

Robert L. Hall of Gates Rubber Company Sales Division, Inc., reports on the AMESTEAM GENERATOR in the firm's Sioux City, Iowa plant:

"We have found this equipment to be very reliable and entirely satisfactory in our application. The boiler has carried the maximum load that we have required of it and we have absolutely no mechanical or electrical difficulties since its installation" (May, 1956).

". . . we had occasion recently to inspect the boiler internally, and it was found to be in excellent condition in every respect".

WHAT'S YOUR STEAM PROBLEM?

If you need 10 to 600 HP and want the kind of space-saving, trouble-free service enjoyed by these owners of AMESTEAM GENERATORS, write today for our catalog and the name of your nearby AMESTEAM dealer.

AMES IRON WORKS INC.

BOX B-77 OSWEGO, N.Y.

NOW 3 SUPERIOR CORN SYRUP SOLIDS

carry the OK BRAND of QUALITY

1. OK DRI-SWEET 42 D.E.—(Granulated)
2. OK DRI-SWEET 42 D.E.—(Powdered)
3. OK DRI-SWEET Low D.E.—(Powdered)

for Better Conditioned, Finer Flavored Foods

OK DRI-SWEET 42 D.E. (GRANULATED) is especially suitable for seasoning comminuted luncheon meats, smoked, cured and preserved meats. It is colorless, reduces watering off, cuts shrinkage, improves texture, is a better binding agent and can be used in greater quantity for maximum fill.

But, whether you produce prepared meat products, dry food mixes, frozen foods, ice creams, soup mixes . . . if you want finer flavor, better texture, controlled moisture, increased solids, and improved shelf life . . . *if you want quality at no extra cost* . . . you can get it with the OK BRAND DRI-SWEET Corn Syrup Solids. In fact, *only* OK DRI-SWEET Corn Syrup Solids provide a combination of *so many advantages in a single conditioner-seasoner.*

Write today for detailed data on how OK DRI-SWEET Corn Syrup Solids can help you improve your production, or phone for a Hubinger Food Products Technician. You'll find him and the Hubinger Customer Research Service OK too.

HUBINGER — QUALITY PRODUCTS — 76 YEARS — From CORN

The Hubinger Company

KEOKUK, IOWA

NEW YORK • CHICAGO • LOS ANGELES • BOSTON • CHARLOTTE • PHILADELPHIA

← For more data, circle this page number on card at back

KEEPING UP WITH THE FIELD

Automation Cuts Candy Costs

New techniques in automatic control can convert a manual, batch candy process to straight-line operation and cut production time from 16 hours to 35 minutes, asserts W. J. Scarlett, food industry sales manager for Minneapolis-Honeywell regulator Co.

In addition, the modernization reduces needed space by two-thirds, and slashes man-hours per unit in half.

Rayed Plastics Under Test

Preparing for the era of radiation processing of foods, researchers at General Electric's Hanford Atomic Products Operation, at Richland, Wash., are finding out how various plastics react to the A-rays.

To test the exposed, rigid and semi-rigid materials, novel machines have been developed that gage flexing and vibration strength of the various plastics.

New Dip Protects Fish

Prevention of freezer burn and discoloration in frozen fishery products is now achieved with a single glaze containing a carbohydrate material, according to Fish & Wildlife Service.

The glaze, applied by dipping such items as salmon steaks and shrimp in a glucose-salt brine, is edible, crack free, and does not vaporize or become permeable to oxygen.

Studies Can Sweating

Sweat damage to canned goods during ocean shipment is now under study at Stanford Research Institute, as a result of a joint effort by the Canners League of California and 33 steam ship, terminal, and container supply firms on the West Coast.

The damage, caused by condensation of moisture on the canned products, is found in both intercoastal and off-shore shipments, and is particularly severe during the winter.

Dedicates Ultramodern Ice Cream and Milk Plant

The doors have just opened on this brand-new milk and ice cream factory in Seattle, Washington. Tanker receiving area can be seen at left, and two loading docks are located at the rear of the 201x292-ft. building. This Carnation facility—which will produce 40,000 gal. of milk per day and 3,000,000 gal. of ice cream per year—contains latest equipment for efficient sanitation, freezing, materials handling, and production.

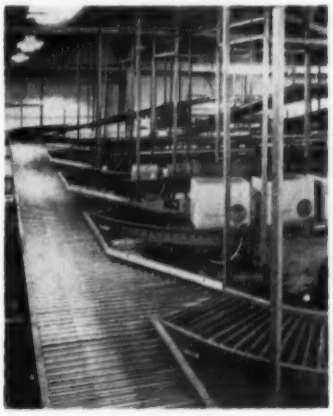
Maker of Synthetic Carotene To Fight FDA Ruling

Vigorous opposition is promised by Hoffman-La Roche, Nutley, N. J., to a recent FDA ruling that classifies synthetic Beta Carotene as a "coal tar color".

The amendment, published in the Federal Register, June 7, reverses the previous liberal interpretation of the law and so broadens the definition of "coal tar colors" that they now will include not only coloring material actually derived from coal tars—but any color that is related in chemical structure to coal tar constituents and could be derived from them.

Synthetic Beta Carotene, Hoffman-La Roche points out, is derived from citral, lemon grass, oils, and other natural products. No coal tar constituents are introduced into the molecule, and the compound is identical with carotene from natural sources.

The company will request a public hearing to present further scientific data, and to call for a re-amendment of the definition.



Automatic Case Handling

Of high interest to processors faced with moving a large daily volume of cased goods to warehouse or order assembly points is this complex conveyor system installed at Armstrong Cork Co., Millville, N. J. Used for handling glass containers, the system involves over 200 conveyors and 400 electric eyes. Twelve control centers guide case "trains".

International Food Law Urged

Obligatory labelling of food products in international trade has been called for in a resolution passed by scientists and manufacturers attending the "World Symposium" on foreign substances in food at Como, Italy.

The delegates—representing 21 nations—recognize the necessity for additives, but want a full statement on food containers listing the substances added by the manufacturers to guard against indiscriminate use of preservatives.

New Dutch Process Turns Grass to Wine

Overthrowing traditional methods for preparing the cup that cheers, a new patented Dutch process turns out wine from grass and sugar—at a cost of only 20c. per gal., as compared with 35c. in the standard technique. Developer is Dr. Jacob Bruiner, formerly with the Netherlands East Indies' sugar industry.

Here's how it's done. Grass, or other vegetable matter, is extracted with water, then mixed with sugar and yeast culture. It takes 1 lb. of grass and 4 lb. of sugar for 2 gal. of finished product.

After fermentation (12½-13% alcohol by volume), wine is clarified and "polished". Because the process avoids formation of methyl alcohol or fusel oil, aging is not necessary.

The new wines, which are said to taste much like the grape product, are projected as an excellent by-product for materials now thrown away, such as fruit and vegetable cannery wastes and cane tops.

Canada to Stiffen Food Laws

To counter camplaints against present labeling and packaging of foods sold in Canada, Canadian authorities are planning to amend food and drug regulations and then back them up with a program of rigid enforcement.

Principle points under attention are slack filling, particularly of dump-filled dry products; inconspicous lettering of net contents on the label; fractional net weights, such as 3¾ and 5½-oz. fills, that make it hard to compare prices between brands; and insufficient packaging for premiums, enclosed with the product.

Industry Leaders Polled On Food Irradiation

Treatment of foods with radiation is still some time off—possibly five years—according to the expert opinions of a wide range of food research and industrial leaders, recently polled by The Refrigeration Research Foundation.

Counteracting many optimistic reports in the press, these men feel that the concept of total sterilization with A-rays may be dropped in favor of partial sterilization, or pasteurization, which presents less problems in off flavors. Estimates of the actual moment when this technique will become commercially available ranged from two to five years, with emphasis on the longer period.

The experts also declare that raying of foods will not significantly affect present processing methods—but will only supplement these techniques and possibly give rise to new types of food products.

Distributors Fight High Costs

"Despite higher wages and material costs and shorter work hours, the food distribution industry has cut margins from 22¼ to 18% over the past 21 years", declared John A. Logan, president, National Assn. of Food Chains, speaking before the Consumers Study Subcommittee of the House Agricultural Committee.

The Congressional group, seeking ways to increase food distribution efficiency, heard Mr. Logan cite better warehouses, more efficient materials handling techniques, packaging, and increased store efficiency as major advances in the distributors fight to "stay even" on distribution margins.

Reclaims Fire-Damaged Cans

For canners faced with the serious problem of reclaiming packaged goods after a fire there is new hope in the form of an automatic machine that strips damaged labels from containers, electrically restores the metallic surface, and buffs cans to their original finish. The unit, sponsored by the Canners Exchange and built by Magnuson Engineers, can be rushed anywhere in the country, and is expected to lower insurance costs by reducing fire losses of canned foods.

Radioactive Carbon Reveals Sugar Penetration in Fruit

The mystery of sugar penetration in canned peaches has been dispelled through use of modern, radioactive carbon, in an experiment at U. of California sponsored by American Maize Products Co.

Starch hydrolysis products of the amylose series—tagged with the "hot" carbon—were added to the sugar syrups used in canning cling peaches. Penetration after processing was checked with histological and radio-chemical techniques.

The scientists report that various sugars travel indescriminately into peaches, appearing in and between the fruit cells, but the rate of diffusion is inversely related to the number of glucose units in each sugar.

To Probe Local 'Food & Drugs'

State and municipal food and drug organizations will be studied with an eye to increasing their effectiveness, as a result of action by the Association of Food & Drug Officials of the U. S. (AFDOUS).

The Association has adopted a committee report recommending a study of laws, housing and lab facilities, and personnel problems—patterned after the recent Citizens Advisory Committee study of Federal Food & Drug procedures.

Preliminary survey of the problems, for which AFDOUS has allocated funds, will be conducted by Public Administrative Service, Chicago.

AFDOUS Elects Officers

Picked to guide the Association of Food & Drug Officials of the U. S. (AFDOUS) for the coming year are: Lowell Oranger, Chicago, president; Ed Randall, Reno, Nev., vice-president; and Joe Lackey, Austin, Tex., secretary-treasurer.

NAFFP Convention Head

Leon C. Jones, vice-president of J. R. Simplot Co., Caldwell, Ida., has been picked as chairman of the National Frozen Food Convention, sponsored by the National Assn. of Frozen Food Packers and slated for March 2-6 in Chicago.

See your wholesaler for

genetron® super-dry REFRIGERANTS

a complete line for your every need!

genetron 11—ORANGE LABEL TRICHLOROMONOFLUOROMETHANE	For industrial and commercial refrigeration and air conditioning systems using single or multi-stage centrifugal compressors. Can also be used for either direct or indirect expansion-type systems.
genetron 12—WHITE LABEL DICHLORODIFLUOROMETHANE **genetron 22**—GREEN LABEL MONOCHLORODIFLUOROMETHANE	Used in virtually all types of refrigeration and air conditioning equipment, large and small, household and industrial, direct and indirect expansion systems. Typical units in which "Genetron" 12 and 22 are used: refrigerators, freezers, frozen food lockers, window air conditioners, home or office console units, large custom-built units for commercial comfort or industrial processes, large store units, mobile units for transportation equipment, large home units for addition to present hot air heating systems.
genetron 113—PURPLE LABEL TRICHLOROTRIFLUOROETHANE	Used in 50-ton and larger centrifugal compressors, primarily for large comfort cooling systems, brine cooling systems, and other commercial and industrial air conditioning and refrigeration systems.
genetron 114A—BLUE LABEL DICHLOROTETRAFLUOROETHANE	Used in centrifugal and rotary compressors for commercial, industrial and household refrigeration.

QUICK FACTS on genetron super-dry refrigerants

- Guaranteed exceptionally low moisture content
- Non-corrosive to standard equipment materials
- Non-toxic, non-flammable, stable, safe
- Critical and freezing points well outside range of operating uses
- Solvent action on oil helps prevent solidification or congealing of lubricant
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications
- Aid in lubrication of equipment; generally miscible with oil
- Available everywhere, from refrigeration wholesalers throughout the country

Allied Chemical

genetron department

GENERAL CHEMICAL DIVISION

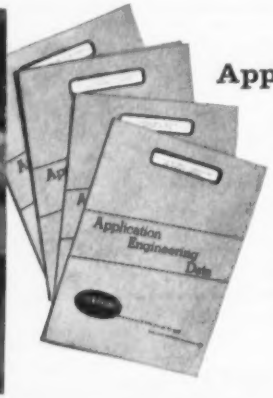
ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

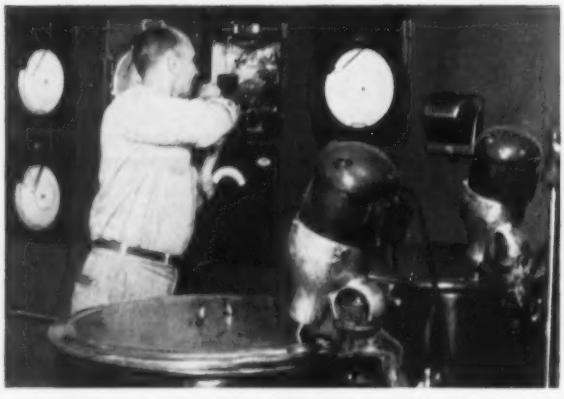
For more data, circle this page number on card at back →

Why you get
MORE FOR YOUR MONEY
with Foxboro Instrumentation

The widespread preference of leading food processors for Foxboro Instruments is no accident. Behind all Foxboro products stand 49 years of engineering integrity in creating instrumentation, not merely as mechanical devices, but primarily as the means *to make processes operate more efficiently*. You get the benefits of this experience in exclusive Foxboro Services that insure better *applications* of instruments, more dependable *performance* of your installation, and *upgrading* of your own process control men. Typical Foxboro extra-value Services:



Application Engineering — Before any application of a Foxboro Instrument or System is recommended, it has been exhaustively group-studied by Foxboro Engineers with specialized knowledge of specific industry requirements and characteristics of the process involved. Resulting Application Engineering Data is available on request.



Scheduled Maintenance Service — For your protection against variations in production quality and process down-time, Foxboro makes available a Scheduled Service Agreement. Under this plan, a factory-trained Foxboro Technician calls at scheduled intervals to maintain your Foxboro Instrumentation at continuous peak efficiency.

Training Classes — For instrument men and engineers of Foxboro Instrument users, the Company offers intensive 3-week training courses in the use, mechanics, application and maintenance of instruments. Conducted by full-time staff, with lectures by engineering and research department specialists, in Training Center at Foxboro, Mass.

WRITE FOR detailed information on Foxboro Instrumentation and its application for your "problem processes". **The Foxboro Company, 307 Neponset Ave., Foxboro, Mass., U. S. A.**

FOXBORO
REG. U.S. PAT. OFF.

INSTRUMENTATION for the Food Industry

Research Center Nears Opening

Scheduled for early completion is this multi-million dollar food research center, now being built by General Foods Corp., at Tarrytown, N. Y. Shown from left to right are the administration, science, and development buildings. The New York Thruway's new Tappan Zee Bridge is in the background.

World Food Shorts

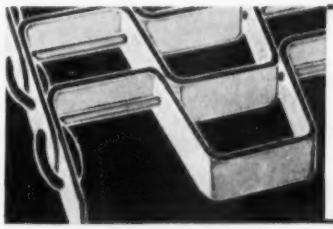
Skim milk may find an important new market in Australia if current pasture-treating experiments prove out. Fields sprayed with the surplus product show an 18-fold increase in pasture growth.

A Simplified MSG Process that cuts equipment and personnel requirements is reported by Japan's Kyowa Fermentation Industry Co. Direct fermentation of inexpensive materials (sugars and ammonium compounds) gives high yield of gluyamic acid.

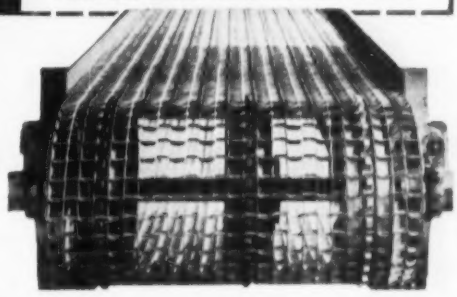
Frozen-Food Production is on the increase in England. Emphasis is on automatic lines (for items such as fish sticks), freezing tunnels, and larger cold-storage plants.

Processed Beef will be Costa Rica's latest export item when its modern slaughter house at San Jose is completed. The $1,000,000 plant will have modern refrigeration and freezing facilities. Previously, a lack of such installations necessitated export of live cattle.

New Rubber-Belt Conveyor that negotiates three-dimensional curves with ease is offered by Gewerkschaft Eisenhutte Westfalia, Luenen, Ger-



Engineered
for EVERY Process
LA PORTE
FLEXIBLE STEEL CONVEYOR BELTING



Food moves smoothly through freezing, cooking and dehydrating processes on this all-process conveyor belting that costs less, wears longer, and requires less maintenance.

The open-mesh construction assures a positive drive on the sprocket, provides for fast drainage, permits free circulations of air around products in process, prevents waste accumulation, protects your products against odors and off flavors, and makes sterilizing with a steam gun or scalding water simple and easy.

If you process, package, ship, or store food products this is the belt for you. Available in ½" x 1" also 1" x 1" in any length and practically any width.

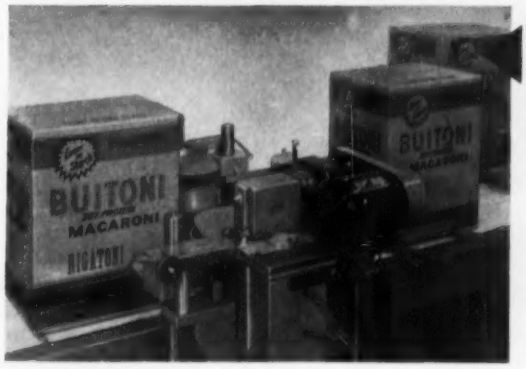
LA PORTE

Ask your Mill Supplier or write for illustrated literature, prices.

MAT AND MFG. CO.
BOX 124 *La Porte, Indiana*

New Package-Imprinting Attachment

makes accurately-located, high-quality imprints on side of cases, crates, cans, etc.



Model "750" ROLAPRINTER machine . . . imprints contents identifications, other legends on side surface of set-up cartons and cases, rectangular metal cans, wood crates, wire or strap-bound bundles, etc. Attaches to conveyor, case-sealer, other production equipment. Not just another "marker" but a precision imprinter that gives "printing-press" results. Also available for imprinting all 4 sides.

This new unit is fully automatic, operates by means of microswitch-activated electro-mechanism that registers imprints accurately; has built-in motor-driven flexographic printing system that synchronizes with surface speed of package. Uses fast-drying liquid ink of any color and rubber type or dies. Write for Bulletin RIN-5.

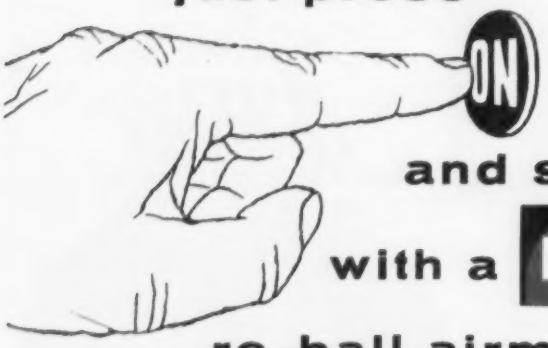
Gottscho

ADOLPH GOTTSCHO, INC.
Dept. G, Hillside 5, N. J.
In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal

Automatic Production-Line CODING, MARKING IMPRINTING MACHINES

For more data, circle this page number on card at back →

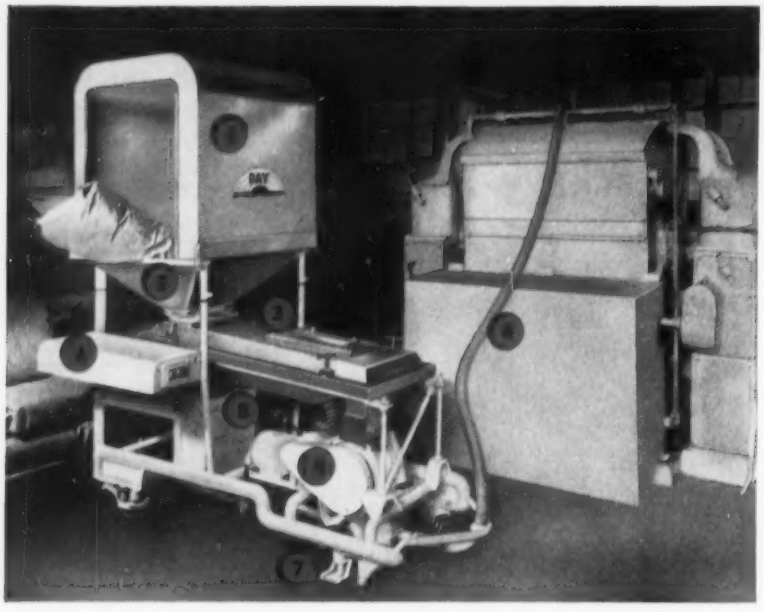
just press



and save with a DAY ro-ball airmatic

Because it's a compact, self-contained, mobile unit that does 3 jobs, it offers appreciable handling and production savings. You press one button and activate a superbly engineered system consisting of a dump bin, a sifter, and an airmatic conveyor. It incorporates these features:

1. STAINLESS STEEL COVER
2. STAINLESS DUMP HOPPER
3. RO-BALL SIFTER
4. BAG REST
5. AERATING CHAMBER
6. CONVEYOR TUBE
7. CASTERS AND FLOOR LOCKS
8. SELF-CONTAINED AIR SUPPLY



It sifts and conveys in excess of 100 lbs. per min., for distances up to 175 feet, not only your standard flours, but specialty materials that can't be handled by your main system. Its simple, rugged construction, ease of operation and maintenance, plus the highly effective sifting job it does through its super-active ball cleaning device, make it indispensable to hundreds of plants. Sanitary tubular construction, self-cleaning air system, and easy access to all parts assure maximum sanitation.

The **J. H. DAY** *Co.*

Division of The Cleveland Automatic Machine Co.

SERVING THE PROCESS INDUSTRY SINCE 1887

4924 BEECH ST., CINCINNATI 12, OHIO

many. Suitable for fine- and coarse-grain materials, and produce, the units have capacities up to 395 cu. yd. per hr., and operate at speeds up to 4½ ft. per sec.—*McGraw-Hill World News.*

BRIEFLY

• **HUMANE SLAUGHTER** method that holds animals motionless in the knocking pen will now be licensed to packers by Koch Supplies, Inc., Kansas City following an agreement with the patent holder, Seitz Packing Co., St. Joseph, Mo.

• **VENDING MACHINE** that gives a choice of two different kinds of bottled drinks has been invented by J. R. Clem, Dallas, Tex.

• **BOYSENBERRY CONCENTRATE** —a new fruit beverage—has been developed at U. of California, Davis. Taste panels report that the tangy product is very refreshing.

• **SAFETY AWARD** for 1,000,000 manhours without a disabling injury has been presented to Knouse Foods' Peach Glen, Pa. plant by the Pennsylvania Mfrs. Assn.

• **COLORED FILM WRAPS** for domestic and imported fish products have been banned by Canadian food and drug authorities. They charge that the colors tend to deceive the consumer as to quality of the foods.

• **MERGER** of Shirriff-Horsey Corp. Ltd. and Salada Tea Co. of Canada Ltd. (including the U. S. company Salada Tea Co., Inc.) is definitely being planned, according to a joint statement issued by both firms.

Action on Standards

Following actions have been taken by the Agricultural Marketing Service (AMS) Food & Drug Administration (FDA) on U. S. Standards and allowable tolerances of various pesticides on raw agricultural commodities. References are to the *Federal Register.*

Kadota Figs, Canned, AMS notice of proposed revision in U.S. Standards, *F.R.*, May 15, p. 3418.

Persian (Tahiti) limes, AMS notice of U.S. Standards, *F.R.*, May 15, p. 3405.

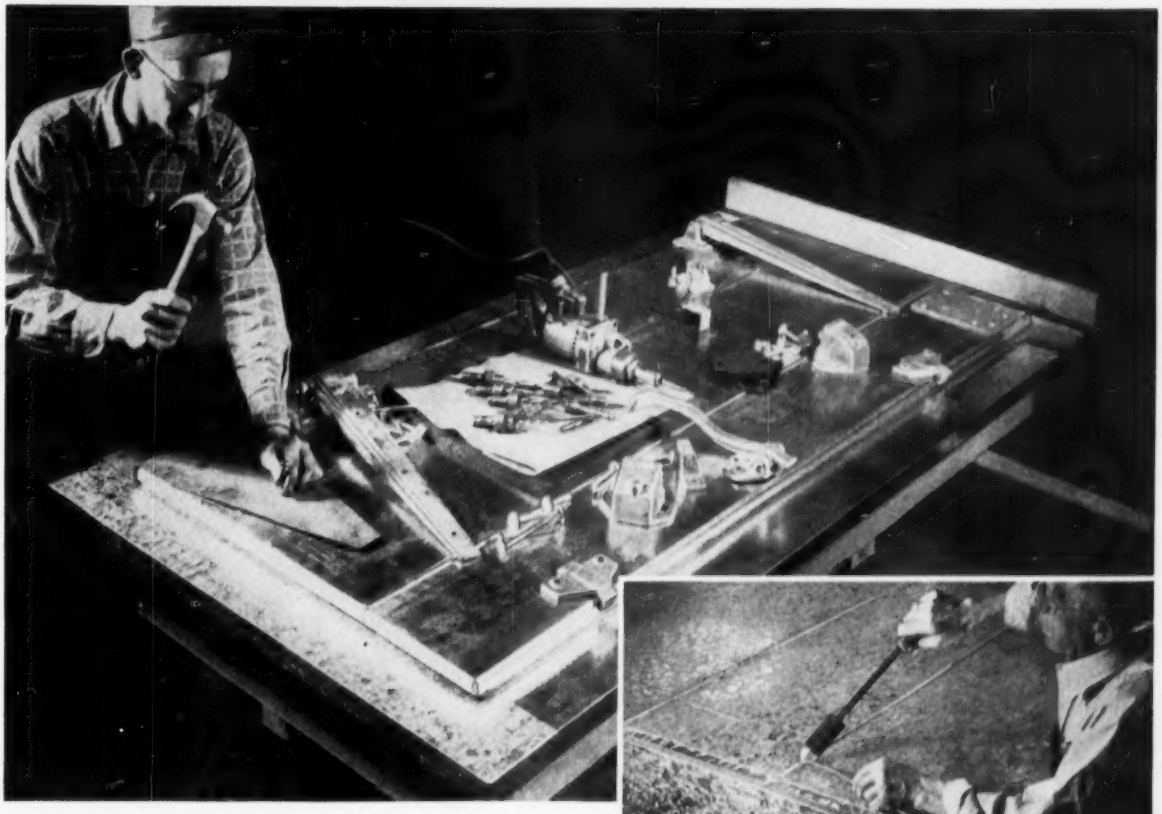
Frozen shrimp, raw breaded, AMS notice of proposed U.S. Standards, *F.R.*, May 18, p. 3484.

Walnuts in the shell, AMS notice of proposed revision in U.S. Standards, *F.R.*, May 21, p. 3519.

Cranberries, fresh, AMS notice of

← For more data, circle this page number on card at back

NEW Jamison VAP·R·TYT* feature gives metal clad doors full protection against moisture penetration

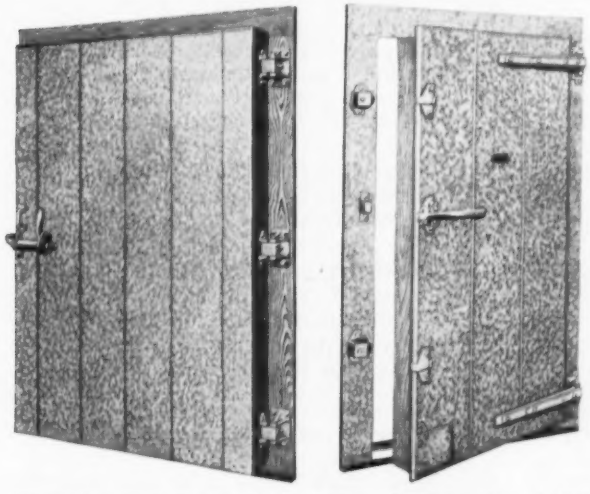


Sealed Penetrating Bolts. The bolts that attach hardware are completely sealed on the warm side.

Locked and Soldered Seams (right) also add to all-around protection.

Vap-r-tyt construction of locked and soldered seams and sealed penetrating bolts is an exclusive Jamison feature. Vap-r-tyt adds longer life to cold storage doors by guarding against deterioration which invariably results when moisture condenses on the inside of the door.

For practical solutions to your door problems in low temperature storage, first get the facts from Jamison. Write to Jamison Cold Storage Door Co., Hagerstown, Md.



All Jamison Super Freezer Doors (left) and Lo-Temp Doors (right) are furnished with Vap-r-tyt construction as standard equipment. Vap-r-tyt is also available as an extra on other metal clad doors.

**Vap-r-tyt is a Jamison trademark*

More JAMISON Doors are used by *more* people than any other Cold Storage Door in the world.

For more data, circle this page number on card at back →

where the need is Critical

THERE are some fields of industry, some professions, where more than ordinary care is required. Food is one, medicine another, chemical research a third. Here purity in its truest sense must be enveloped with meticulous care every step of the way.

Relatively minor elements of equipment often play a vital part. For example, if the tubing used to transport liquid food should be attacked by one of the food chemicals trouble could be serious; a life could be endangered if the wrong tubing were used to convey blood or blood plasma; a research project could fail if contaminants leached out to spoil a solution.

This is why those whose job it is to safeguard purity specify Tygon Tubing for critical tasks. This flexible, plastic tubing, crystal clear, flexible as a piece of string, tough as leather, resistant to acids and alkalies, offers a combination of properties found in no other material.

And like metal alloys, basic properties of this unique "flexible glass" plastic tubing can be varied to meet a wide range of special requirements. Thus, Tygon Tubing is made in many standard formulations and in innumerable special ones.

That is why those whose job it is to safeguard purity specify the specific formulation of Tygon Tubing designed to fit their exact needs . . . *for they know, as do we, that no single formulation can do all things well.*

Tygon plastic Tubing is made in many formulations, each designed for a specific usage . . . and in over 60 sizes, from ⅛" to 3" I.D. Write for Bulletin T-97.

PLASTICS & SYNTHETICS DIVISION

U. S. STONEWARE

AKRON 9, OHIO

5F

← For more data, circle this page number on card at back

proposed U.S. Standards, *F.R.*, June 4, p. 3881.

Onions, canned, AMS notice of time extension for filing data, *F.R.*, June 4, p. 3882.

Prickly pear jelly, FDA Standards of Identity, *F.R.*, May 23, p. 3639.

Certain canned fruits and artificially sweetened canned fruits, FDA Standards of Identity, *F.R.*, May 28, p. 3733; correction, *F.R.*, May 30, p. 3816.

Orange juice, canned industrial orange juice, orange juice for processing, concentrated orange juice, and sweetened concentrated orange juice, FDA Standards of Identity, *F.R.*, June 4, p. 3893.

On asparagus, barley, blackberries, boysenberries, carrots, collards, corn, currants, dandelions, dewberries, endive, figs, garlic, gooseberries, guavas, horseradish, kohlrabi, leeks, loganberries, mushrooms, nectarines, oats, parsley, parsnips, peppermint, pumpkins, quinces, radishes, raspberries, rice, rye, salsify, shallots, spearmint, swiss chard, water cress, wheat, meat of cattle, swine, chickens, ducks, geese & turkeys, chicken eggs, milk, pecans & walnuts, tolerances of Malathion, *F.R.*, June 7, p. 4031.

On apples, cherries, and pears, tolerances of 0, o-diethyl o- (2-isopropyl-4-methyl-6-pyrimidinyl)-phosphorothioate, *F.R.*, June 7, p. 4017.

On peaches, tolerances of sodium-.0-phenylphenate, *F.R.*, June 11, p. 4103.

On pineapple, citrus citron, grapefruit, kumquat, lemons, limes, oranges, pineapple, tangelos and tangerines, tolerances of sodium-o-phenylphenate, *F.R.*, June 11, p. 4076.

On potatoes, grapes, pineapple, and sugar beets and tops, tolerances of sodium 2, 2-dichloropropionate, *F.R.*, June 11, p. 4076.

Okra, canned, AMS notice of U.S. Standards, *F.R.*, June 7, p. 4012.

Clingstone peaches, canned, AMS notice of U.S. Standards, *F. R.*, June 12, p. 4126.

On milk tolerances of Methoxychlor, *F.R.*, May 18, p. 3488.

On apples, celery, peaches, and tomatoes, tolerances of Dichlone, *F.R.*, May 23, p. 3624.

On wheat, corn, barley, oats, rice, grain sorghum, rye and buckwheat, exemption from tolerances of chloropicrin, *F.R.*, May 25, p. 3707.

On string beans, bitter melon, cantaloups, cavendish bananas, citrus fruits, cucumbers, guavas, litchi nuts, mangoes, papayas, peppers, pineapples, zucchini squash and plums,

Keep your product on the move

WITH ASHWORTH PROCESS BELTS

You can combine processing and product movement, whether it be doughnuts or dog biscuits, pickled beets or fried fish, potato chips or frozen rabbit, Ashworth can help make savings in production.

ASHWORTH BROS., INC.
WINCHESTER, VIRGINIA

Sales Engineers: Atlanta • Buffalo • Charlotte, N. C. • Chicago • Cleveland • Dallas • Detroit • Greenville, S. C. • Los Angeles • Louisville • New York • Philadelphia • Rochester • Seattle • St. Louis • St. Paul • Canadian Rep., PECKOVER'S LTD., Toronto • Montreal

WRITE FOR ILLUSTRATED CATALOG E-55

World's Largest Quick-Freezing Plant Finds

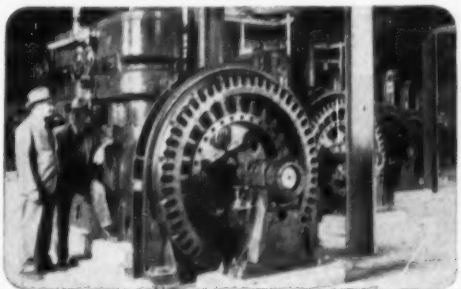
FRICK

Refrigeration Highly Dependable

Seabrook Farms, near Bridgeton, N. J., have been using Frick refrigerating equipment exclusively since 1929. Today, Seabrook operates 22 Frick compressors. Of these, 12 are heavy-duty 4-cyl. machines, with 12-in. stroke. Total refrigeration horsepower is over 5000. Belford Seabrook, vice president in charge of engineering, writes about the excellent service record made by these big machines, several of which are in continuous operation, day and night, most of the year:

"Figured on the original investment in these compressors, the annual cost of repair parts, including their installation, is averaging only 1 per cent." Other users have had Frick compressors in continuous operation for four to six years without even opening the machines!

If you want the last word in reliable refrigeration, specify Frick equipment, and accept nothing less.



Belford Seabrook, Operating Vice President, checks the performance of the Frick compressors.

DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA., U.S.A.

For more data, circle this page number on card at back →

Replace them all

pumps, motors

ladders

buckets, brushes

and clean up faster with the new Oakite SANISEPTOR

So much faster that a brewery reports the unit paying for itself in one day's use...a meat packer figures each hour's use of the Oakite SANISEPTOR saves him $1.60...a food packer states his maintenance cleaning time has been cut "just about in half."

Not only faster, but better, too, because the cleansing jet-stream from the Oakite SANISEPTOR can reach places where brushes and mops can't – way up, behind and under equipment, in narrow crevices and tight corners.

Mechanized cleaning couldn't be simpler. Just load the SANISEPTOR with Oakite detergent, connect to any hot-water outlet and turn a valve. You get a jet of hot detergent solution to knock loose the toughest soils. Turn another valve to rinse. No pump, motor or steam supply needed because the Oakite SANISEPTOR operates on your own line pressure. Weighs only 25 lbs., stands only 21 inches high, easily portable from job to job. Use it everywhere – on conveyors, holding tanks, vats, equipment, floors, walls. For more details, write to Oakite Products, Inc., 26G Rector Street, New York 6, N.Y.

SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS · METHODS · SERVICE

SCIENCE

Export Division Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada

tolerances of ethylene dibromide, *F.R.*, May 28, p. 3722.

On wheat, barley, oats, rice and rye, tolerances of Toxaphene, *F.R.*, May 30, p. 3816.

Schedule of Events

July

18-19—National Kraut Packers Assn., annual convention; Catawba Cliffs Beach Club, Port Clinton, Ohio.

22-24—National Macaroni Mfrs. Assn., annual meeting; Grand Hotel, Mackinac Island, Mich.

August

3- 7—International Food Show; Municipal Auditorium, Atlanta, Ga.

5- 7—International Apple Assn., annual convention; Netherland Hilton Hotel, Cincinnati.

12-16—Gordon Research Conferences, vitamins and metabolism; Colby Junior College, New London, N. H.

21-23—USDA's West. Util. Res. & Dev. Div., annual potato utilization conference; Albany, Calif.

25-28—National Fancy Food & Confection Show; Sheraton Astor Hotel, New York City.

26-28—National Soybean Processors Assn., American Soybean Assn., joint annual meeting; Leamington Hotel, Minneapolis.

28-30—Instrument Society of America, national gas chromatography conference; Kellogg Center, Michigan State U., E. Lansing.

STEEL

Every Kind

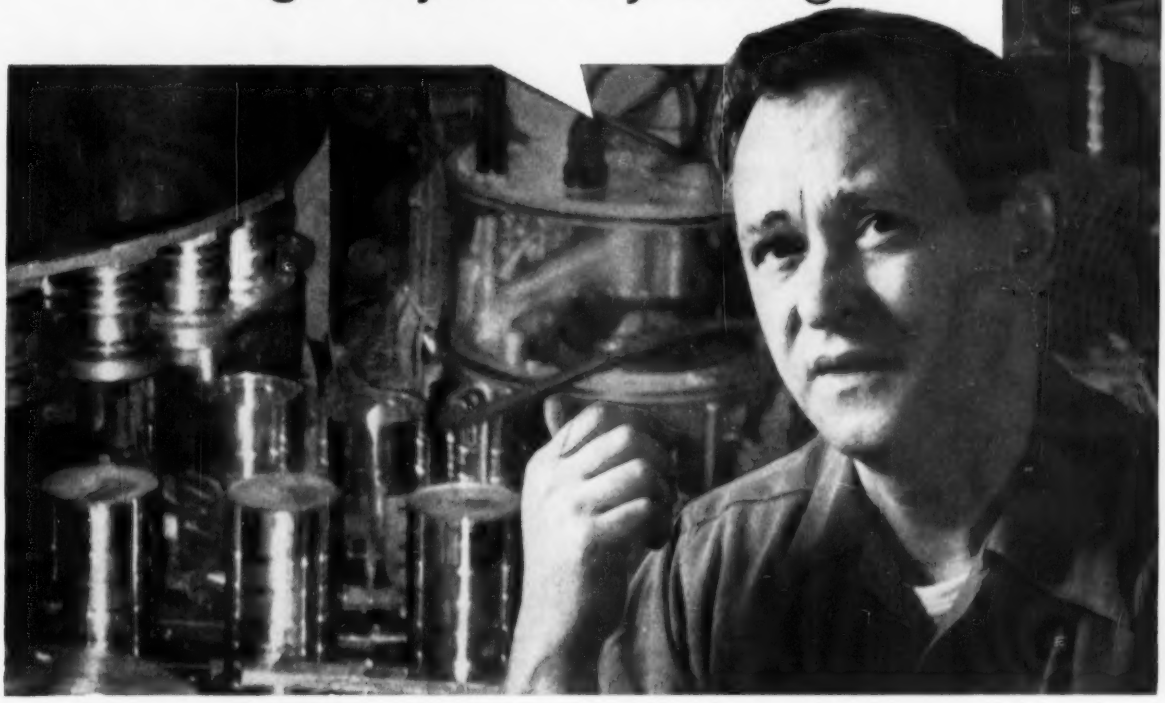
Quick Delivery

Plates, Structurals, Bars, Sheets, Tubes, etc. Carbon, Alloy, Stainless Steels, Babbitt Metal.

RYERSON

Joseph T. Ryerson & Son, Inc. Plants: New York, Boston, Wallingford, Conn., Philadelphia, Charlotte, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Milwaukee, Chicago, St. Louis, Seattle, Spokane, Los Angeles, San Francisco

"The salt we use does a good job—why change?"



When you can do a better job with another kind of salt, it's worth making a change

. . . And a change to Morton '999' Salt for processed foods will insure better, more uniform flavor. For '999' is a low-price, premium grade salt entirely free from bitter calcium and magnesium compounds that can distort flavor. Morton '999' Salt is always 99.9% clean, pure sodium chloride, exceptionally low in the objectionable trace metals, copper and iron.

Unlike some salt, the quality of '999' never varies from shipment to shipment, whether you buy it in bulk for direct salting or brine, or in handy tablets made to your own specifications.

Morton technical service can help you do a better job, too. A Morton Consulting Engineer will be happy to discuss salt with you. He also can help you with such problems as installing a water softening system, or modernizing or expanding a brine installation. And he's backed by the services of the best equipped salt research center in the world—Morton's multimillion-dollar research laboratory in Woodstock, Illinois. Best of all, there's no charge or obligation for any help you receive through a Morton representative.

Regardless of your size, we think you'll find it well worthwhile to talk about salt and service with a Morton Consulting Engineer. If you agree, just write:

MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. FE-7, 120 So. LaSalle Street,
Chicago 3, Illinois

For more data, circle this page number on card at back →

MORE THAN THE LUBRICATION LEADER . . .

ALEMITE®

YOUR ONE DEPENDABLE SOURCE FOR ALL THESE VITAL PRODUCTS:

1. Lubrication Equipment
2. Spray Pump Equipment
3. Hydraulic Hose, Couplings

. . . with nation-wide service and training programs to back up the products!

Cut Lubrication Costs up to 64%! Alemite offers the widest choice of lubrication fittings on the market—time-saving pumps and guns for handling of lubricants—fully automatic airborne mist lubrications systems—centralized systems for both oil and grease.

Apply Materials 30% Faster!—If you use any material that is received in a drum—paint, putty, caulking, even food products . . . Alemite can pump direct from the drum to point of application for spraying, extruding, transferring, packaging!

Protect Hydraulic Systems!—Alemite offers a complete line of non-skive, reusable high pressure hose and couplings for *any* hydraulic system.

And Alemite backs up these products with service points from coast to coast—with free training programs and plant surveys that will save money for *your* company!

For free catalogs and complete information, write Alemite, Dept. S-77, 1850 Diversey Parkway, Chicago 14, Ill.

STEWART SW WARNER

ALEMITE

REG. U. S. PAT. OFF.

Division of STEWART-WARNER CORPORATION

Alemite is the only *single source* for all these famous products:

OIL-MIST	Automatic Airborne Lubrication System
Centralized Lubrication Systems	Accumatic
red-ball	Hydraulic Lubrication Fittings
Barrel Pumps for Oil and Grease	"POWERHOUSE"
"BARREL-TO-BEARING"	Manual and Power Operated Pumps and Guns
Spray Pump Equipment	ALEMITE Versatal
SURGEPRUF	Hydraulic Hose and Couplings

MEN & COMPANIES

Personnel

Bernard T. Barker is new manager of Franklin Baker Co. of the Philippines, a subsidiary of General Foods Corp. that processes cocoanuts for commercial use in the U. S. and Canada.

Ernest J. Gallo, Robert Gibson, E. L. Barr, Robert Mondavi, B. W. Goldthwaite, and **Harry Baccigaluppi** have been elected, respectively, board chairman, first v.-p., second v.-p., third v.-p., treasurer, and secretary of Wine Institute, San Francisco.

Walter Greenspan, Flagstaff Frozen Foods Assoc., Inc., Newark, N. J., is new president of Eastern Frosted Foods Assn.

Norman W. Kempf, General Foods Corp., has been presented the Stroud Jordan Award by the American Assn. of Candy Technologists. Honored in his outstanding contribution to candy research.

E. Robert Kinney has been elected executive v.-p. and general manager of Groton's of Gloucester, Inc., Gloucester, Mass.

Lawrence L. Lovett is new president of New England Mfg. Confectioners Assn.

Donald E. Mook is director of research for Borden Food Products Co., Syracuse, N. Y.

Roderick K. Eskew
—Gets USDA's Superior Service Award

In recent ceremonies in Washington, top USDA recognition—the Superior Service Award—went to Roderick K. Eskew, Engineering Head of the Wyndwood (Philadelphia) Laboratory of Eastern Utilization Research & Development Division.

Honored were his "outstanding initiative and leadership in the organization and development of new processes and products which have resulted in increased utilization of agricultural products."

Mr. Eskew directed the pioneering work on the first commercially successful process for recovering the flavors from fruit juices in concentrated and substantially unaltered form. His group then developed a continuous process for making powdered deciduous fruit juices with "locked-in" aromas. No refrigeration is required for these products.

Moreover, the new potato flakes—which have been winning a fine reception in market tests—were originated and evaluated under his guidance. A number of companies are interested in this dehydrated mashed-potato product. It promises to provide an important new outlet for surplus tubers.

Mr. Eskew's engineers are currently at work on a new dried whole milk. This product would disperse instantly, even in ice water, and have fresh-milk flavor.

Educated at the U. of Arizona and MIT, Mr. Eskew was first associated with the Brown Co. of Berlin, N. H., then DuPont, and later Hercules Powder Co. He subsequently went with Tubize-Chatillon Co., of Rome, Ga., as assistant chief chemist.

From there he was called, in 1940, to organize Eastern Regional Research Laboratory's new Engineering & Development Section.

He has authored a number of FE articles detailing various developments of his group.

Model SP-6

Models SN-7, 8 Panel

Models SL-8, SL-10, SL-12 Panel

Models MC-8, 10, 12

Model MC-8, 10, 12 Merchandiser

This Mark of Quality

BOYERTOWN "BETTER BUILT"

means MORE VALUE PER DOLLAR

for • COST-CONSCIOUS BUYERS
• DISCRIMINATING DRIVERS
• EFFICIENT MAINTENANCE MEN

Delivery Vehicle Builders

for 85 years

Models MF-8, 10, 12 Merchandiser

Models MF B-8, 10, 12 Merchandiser

Model SL-10 Panel

BOYERTOWN AUTO BODY WORKS, Inc.
BOYERTOWN, PENNA.

For Information Write To:

For more data, circle this page number on card at back →

Here's

BIG-VOLUME SIFTING

with BIG SAVINGS!

RICHMOND/SPROUT-WALDRON

Gyro-Whip Sifters

Amazingly compact, yet big in output, Gyro-Whip Sifters save floor space. Simplified design reduces maintenance and cleaning time and makes possible the most rigid standards of sanitation.

The average Gyro-Whip is only 48" high, requires only 3½' x 3½' floor space, and operates on only ¾ h.p. Bolting areas range from 47.5 up to 95 sq. ft.

These Gyro-Whip Sifters are available in sizes from 3-sieve to 20-sieve mounted models. Also available are free-swinging supersifters with as many as 180 sieves. Can sift from 2 mesh up to 325 mesh. Stainless steel and wood construction. Aspirator tips to air wash graded products can be provided. Installation can be on the stream. It is a self-contained unit, ready to be bolted down and connected to existing spouting.

Write for Bulletin 135-A.

PS/905-P

SPROUT-WALDRON

Manufacturing Engineers Since 1866

85 LOGAN STREET • MUNCY, PA.

EQUIPMENT FOR SIZE REDUCTION, MIXING & BLENDING, PELLETING & CUBING, BULK MATERIALS HANDLING, PRODUCT CLASSIFICATION.

Watson H. Vanderploeg, 68, president of Kellogg Co., Battle Creek, Mich., recently died.

Lyle C. Roll is newly elected to succeed Mr. Vanderploeg as president of Kellogg.

D. B. Montgomery is new v.-p. in charge of real estate operations for Consolidated Foods Corp., Chicago.

Faris R. Russell announces his resignation as board chairman of Ward Baking Co. He will be succeeded by R. Arnold Jackson.

William F. Nadisch has been elected president and general manager of Meadow Gold Ice Cream Co., Baltimore, Md. He succeeds M. Jacob Abrams, who passed away May 20.

Dr. Ernest W. Reid has been honored with a citation from Midwest Research Institute. Hailed is his "leadership and stimulation of scientific research" during long service as a trustee of the Institute.

Edward R. Renouf is newly elected v.-p.-administrative,, and board member of Campbell Soup Co., Ltd., Toronto.

Walter S. Barlow is newly appointed director of quality control and product research for Southland Frozen Foods, Inc.

Roy L. Rollins is new v.-p. of A. E. Staley Mfg. Co., Decatur, Ill.

Harold F. Saufley, Frank E. Trager, John G. Schuettinger, and **Richard G. Toomy,** have been named respectively, v.-p. in charge of raw sugar and molasses operations; general industrial sales manager; asst. v.-p., American Molasses Co., in charge of plant planning and development, and v.-p. Boston Molasses Co., by American Molasses Co., New York City.

Frank T. Sherk, has been elected to the international executive committee of H. J. Heinz Co., Pittsburgh.

Industry

Continental Baking Co., has moved its headquarter-offices from New York City to Rye, N. Y.

Cascade Gold Star Dairies, Inc., Yakima, Wash., has been purchased by Carnation Co., the former announced.

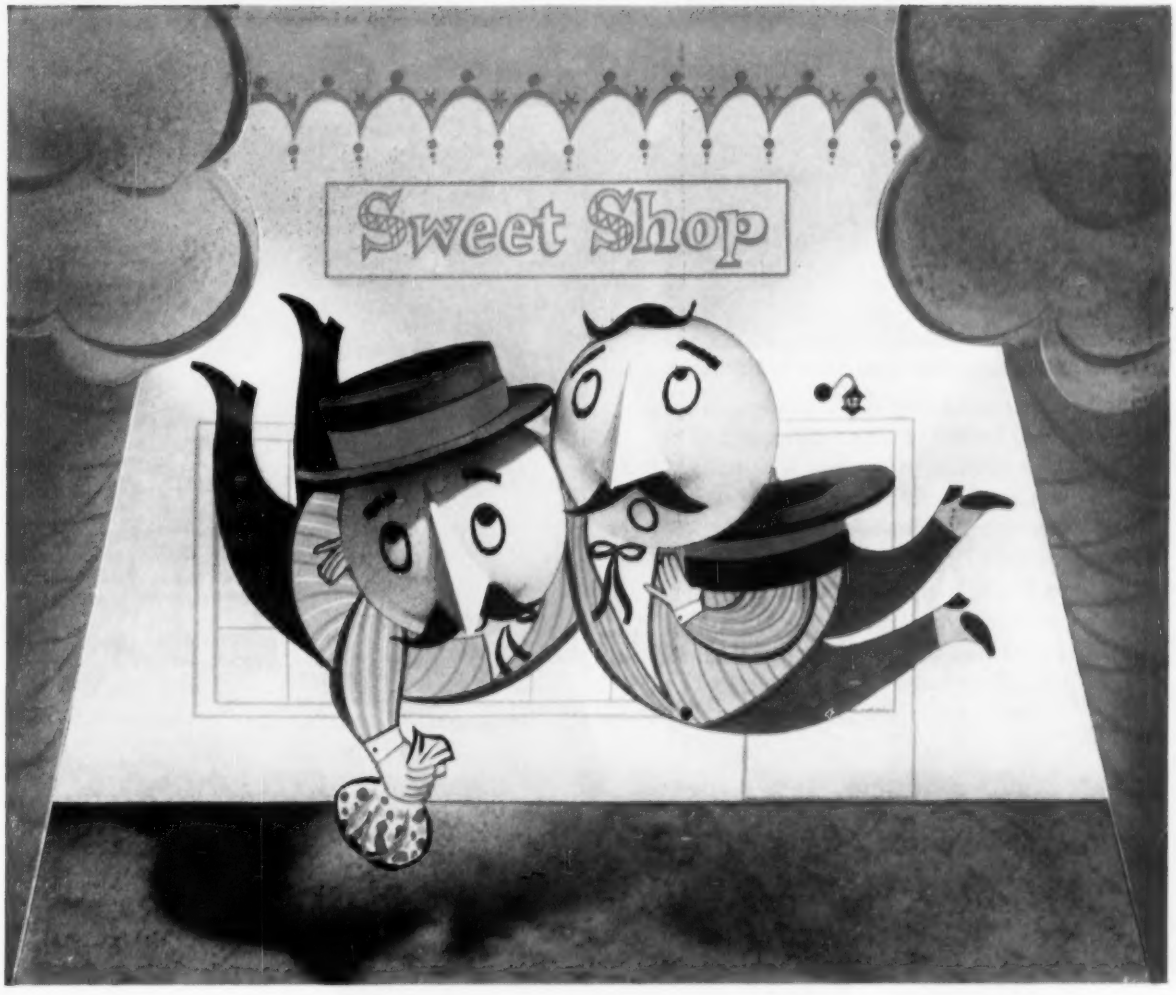
Jerseymaid Milk Products Co., Los Angeles, has begun a $500,000 expansion program.

Paulus Bros. Packing Co., Salem, Ore., has begun construction on a large canned goods warehouse in Salem.

Pepsi-Cola General Bottlers, Inc., has opened a new $2¾ million bottling plant in Chicago.

Edward Aaron Corp., Kansas City, Mo., announces construction of a new poultry processing plant in Springdale, Ark.

DOW



Harmony for sweet sales:

Palatone and Cyclotene

Dow flavor intensifiers work well separately or together—giving added sales-appeal to ice cream, baked goods, candy and flavors!

Music to your ears! Referring, of course, to the sales reports you'll hear when you use Palatone® and Cyclotene® in your products. Both of these Dow aromatics accent flavor—and sales—appeal!

Palatone® is one of the rare flavor materials whose aromas closely resemble their tastes. Its distinct caramel-butterscotch odor emphasizes the sweetness of most blends. Palatone is also successful in compounding rich vanilla and chocolate flavors.

Palatone and Cyclotene® work very well together as flavor intensifiers. Cyclotene has a maple-licorice flavor, with a suggestion of walnut, which highlights the customer appeal of ice cream, baked goods, candy, tobaccos and peanut products.

Technical bulletins and samples are yours for the asking. You'll be sales ahead by writing on your letterhead to THE DOW CHEMICAL COMPANY, Midland, Mich., Dept. FC 869H3.

YOU CAN DEPEND ON DOW

For more data, circle this page number on card at back →

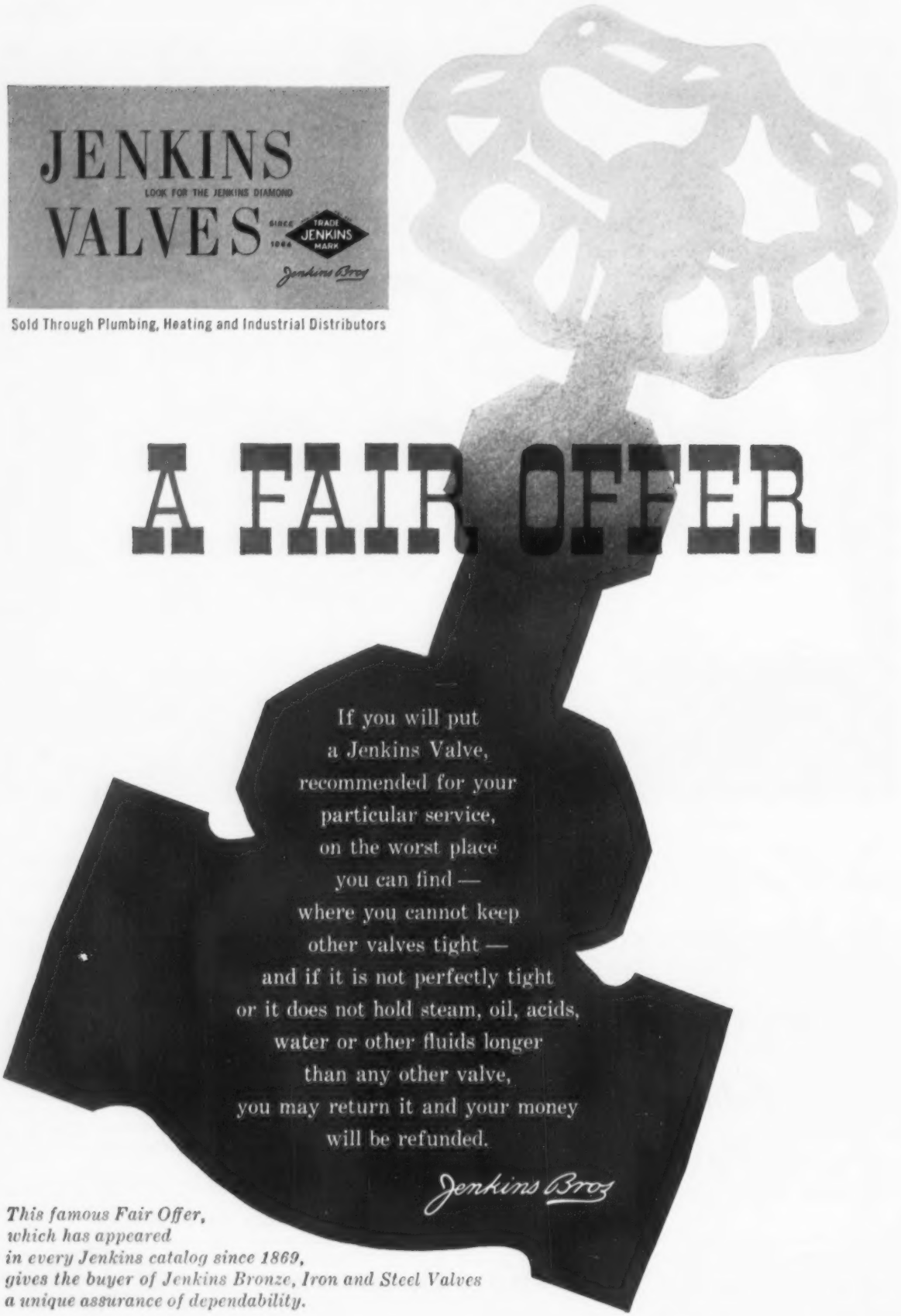
JENKINS VALVES

LOOK FOR THE JENKINS DIAMOND

SINCE 1864 TRADE JENKINS MARK

Jenkins Bros

Sold Through Plumbing, Heating and Industrial Distributors



A FAIR OFFER

If you will put
a Jenkins Valve,
recommended for your
particular service,
on the worst place
you can find —
where you cannot keep
other valves tight —
and if it is not perfectly tight
or it does not hold steam, oil, acids,
water or other fluids longer
than any other valve,
you may return it and your money
will be refunded.

Jenkins Bros

This famous Fair Offer,
which has appeared
in every Jenkins catalog since 1869,
gives the buyer of Jenkins Bronze, Iron and Steel Valves
a unique assurance of dependability.

Clinton L. Brooke, Merck & Co., Inc., is newly named president of American Assn. of Cereal Chemists., St. Paul, Minn.

Associated Industries

American Can Co. has opened a beer can plant in Detroit.

Baker-Raulang Co., Cleveland, has elected Eugene Caldwell president.

Cherry-Burrell Corp., Chicago, announces election of Howard H. Cherry, Jr., as president.

Creamery Package Mfg. Co., Chicago, has advanced Harold J. Kerr to director of branch operations.

Gardner-Denver Co., Quincy, Ill., has elected George W. Gutekunst, C. H. Rieman, and Brice D. Maddox v.-p.'s.

Graver Tank & Mfg. Co., Inc., Chicago, is celebrating its 100th anniversary.

Glass Container Manufacturers Institute, Inc., New York City, reports election of Edmund F. Ball as president.

Herb-Shelly, Inc., Farmington, Minn., has appointed Hamilton Moran executive v.-p. sales manager.

H. K. Porter Co., Inc., New York City, announces acquisition of Federal Wire & Cable Co., Ltd., Guelph, Ontario.

Infilco Inc., Los Angeles, has elected P. N. Engel board chairman, and J. S. Gustafson president.

Inland Container Corp., Indianapolis, reports plans for a new corrugated box plant and warehouse in Dallas.

Mathews Conveyor Co., Ellwood City, Pa., announces election of L. T. Sylvester as board chairman, and O. H. McCleary as president.

National Assn. of Refrigerated Warehouses has elected Sheffield A. Kadane president.

Thermo King Corp., Minneapolis, has appointed M. B. Green to the post of executive v.-p. and general manager.

Trans-American Refrigerated Services Ltd., has been formed at Chicago as a nation-wide network of five independent refrigerated warehousing companies. Lowell E. Kern is president.

H. J. Barnum, Jr., has been appointed executive v.-p. of Shirriff-Horsey Corp. Ltd., Toronto.

Deaths

Otto M. Dreikorn, 71, president and treasurer of Dreikorn Bakery, Boston.

Herman Giesecke, product manager, Yeast Plant No. 2, Anheuser-Busch, Inc., Old Bridge, N. J.

Leon D. Lewis, 85, former v.-p. of Curtice Canning Co., Rochester, N. Y.

Leonard H. Male, 60, specialist in the field of milk and food sanitation for U. S. Department of Health, Education & Welfare, Washington, D. C.

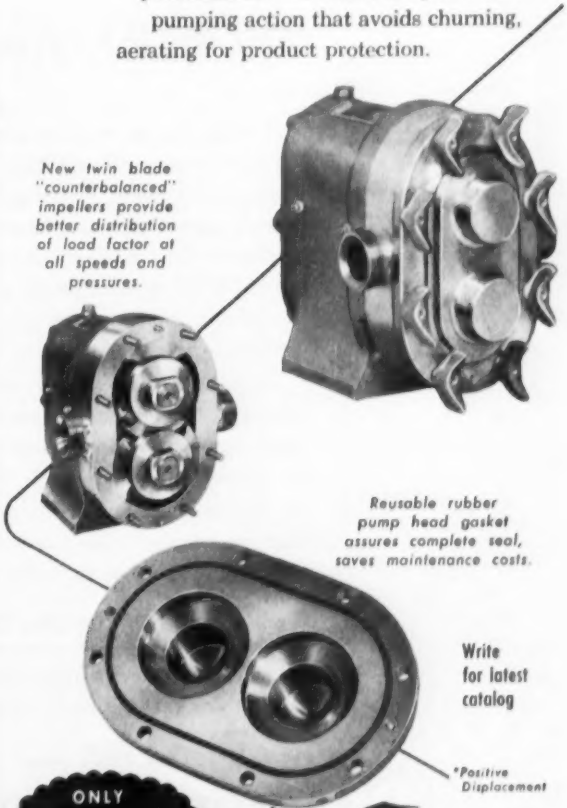
Thomas L. Smith, 79, former president of Standard Brands, Inc.

Domenic Vincenti, 79, D. Vincenti & Co., Kennett Square, Pa., mushroom canners.

WAUKESHA P.D.* Sanitary Pumps designed for faster cleaning longer service life

Greater time savings in dismantling, cleaning, sterilizing, assembly; longer operational life; remarkably low maintenance costs — these are advantages that every dairy plant appreciates in the new Waukesha Positive Displacement Sanitary Pump.

New engineering brings the load on the impeller end of the shaft close to the ball bearings — to lessen wear in impellers, body and cover . . . larger, stronger shafts, huskier splines, leakproof O-Rings, new stainless steel reversible shaft sleeves, re-usable pump head rubber gasket — all are exclusive features that make Waukesha your most profitable investment in pump performance — Positive Displacement pumping action that avoids churning, aerating for product protection.


New twin blade "counterbalanced" impellers provide better distribution of load factor at all speeds and pressures.
Reusable rubber pump head gasket assures complete seal, saves maintenance costs.

Write for latest catalog

*Positive Displacement

ONLY Waukesha gives you a quarter century's experience and reliability

Waukesha FOUNDRY COMPANY

DEPT. A-7, WAUKESHA, WISCONSIN

taste like home baked?

then she'll buy **again!**

. . . If it doesn't, she won't, no matter what convenience your cake mix or frozen baked goods may offer. More than almost any other prepared food product, baked goods are subject to the keenest type of taste discrimination. The traditional picture of a motherly woman, carefully rolling dough, or cutting cookies is still strongly mingled in the American mind with tantalizing taste appeal. This psychological background is your greatest competitor . . . the strongest deterrent to the sale of more and more dry mixes and frozen baked goods.

It can be fought most effectively at the source . . . by providing that home baked taste through the judicious use of specially formulated flavors and seasonings. Specially formulated, because *dry mixes and frozen foods are different* and require a new flavor technology as well.

Let the D&O Laboratories put "home-baked flavor sell" into your prepared mixes and frozen baked goods. It's our job . . . and we know it well. Inquiries invited.

Write for copy of "Changing World of Food"

See what can be done to maintain that home-baked flavor in your cake mix or frozen baked goods.

Our 158th year of service

DODGE & OLCOTT, INC.

180 VARICK STREET, NEW YORK 14, N. Y.

Sales Offices in Principal Cities

ESSENTIAL OILS • AROMATIC CHEMICALS • PERFUME BASES • FLAVOR BASES • DRY SOLUBLE SEASONINGS

← For more data, circle this page number on card at back

ADVANCES IN TECHNOLOGY

Cake Volumes Measured By Photoelectric Unit

An improved method of measuring volume of round cakes which involves use of a photoelectric cell, combines convenience and accuracy not attainable by other methods.

The machine consists of a special collimated light source, a selenium photocell, and a turntable interposed between light source and cell. When sample is placed on turntable it casts its shadow on the photocell, emf. output of which is directly proportional to the illuminated area, or inversely proportional to sample volume. To obtain true readings, sample is rotated on the turntable.

Electrical circuitry of readout system is such that photocell emf. is balanced against a standard emf. in a null balance circuit, and volume of object is read directly in cc.—Paper by J. N. Krueger and J. R. Perrozzi, Pillsbury Mills, presented at annual meeting of Amer. Assn. of Cereal Chemists, San Francisco, May 22, 1957.

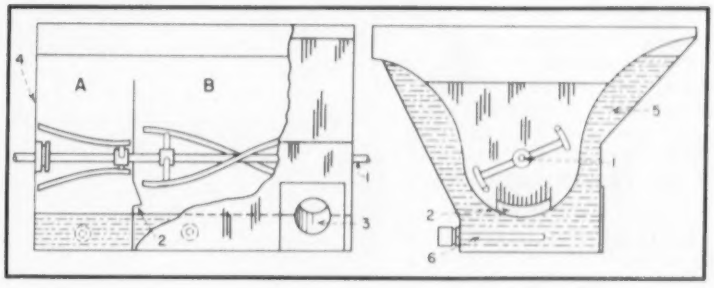
White Crumbs Indicate Age of Frozen Bread

Length of time bread has been held in frozen storage is indicated by a whitened or opaque appearance in the crumb that is easily distinguishable from the normal semi-translucent crumb.

The whitening appears as a ring from $\frac{1}{8}$ to $\frac{1}{4}$-in. wide, lying from $\frac{1}{8}$ to $\frac{3}{8}$-in. beneath the crust surface. It develops within 2 weeks at 15F., 5 weeks at 10F., and 10 weeks or more at 0F.

Appearance of crumb is similar to that of surfaces of meat and poultry affected by "freezer-burn". An essential difference is that the white rings in bread occur beneath the surface and are thought to result from movement of moisture by sublimation within relatively narrow regions.

Reversion to the natural appearance does not occur upon defrosting or on refreshening by heating to 140F. for a few min. But moistening the whitened crumb and allowing it to dry, or exposing to a humid atmosphere for a day or two will restore its normal appearance.—Paper by J. W. Pence, et al., USDA's WURL, presented at annual meeting Amer. Assn. Cereal Chemists, San Francisco, May 22, 1957.



Tempers Chocolate For Enrobers

An apparatus has been patented for continuously tempering or seeding chocolate to be used in enrobing ice cream, biscuits, or other confections.

The machine comprises a horizontal trough-like container, vertically partitioned into two compartments (A and B, in drawing above), each of which is jacketed. Rotatable agitators, one in each compartment, are mounted on a common shaft (1).

A louvered orifice (2) between the first, or "seeding," and the second, or "working," compartments, permits continuous flow of the molten chocolate from one to the other. Outlet (3) from second compartment provides for discharge to a pump that feeds the enrober.

Front end-wall (4) of seeding compartment is chilled with air or water. Other walls are heated by water in jackets (5), temperature of which is maintained by electric heater (6). Agitator in seeding compartment has a minimum of clearance with the end cooled wall, so as to scrape therefrom the congealed chocolate and mix it with the mass.

In operation, molten chocolate at a temperature of 135F. is fed to the seeding compartment which is maintained at 85F.

Chocolate that congeals on the end wall is dislodged by the agitator and mixed with the main mass. Then, as it passes through the orifice, it serves to temper the mass in the working compartment. Here the chocolate is further mixed at a temperature of 90F. It then passes through the pump to the enrober. Surplus from here is returned to the seeding compartment.—U.S. Patent 2,784,095, Mar. 5, 1957.

Aerating Properties of Eggs

Aeration of cake mixes is often estimated by measuring percentage increases in volume due to incorporating air into an air-free mix.

It is also possible to make qualitative examinations for bubble sizes by drying a thin film of batter on a microscope slide and measuring bubble diameters with an eye-piece micrometer. Bubble sizes are highly unsymmetrical, and the major part of the air is contributed by a relatively small number of large ones.

For an egg-sugar-flour sponge sandwich mix, without baking powder added, optimum characteristics are about 25,000,000 bubbles/g., averaging about 45 microns dia., and as uniform in size as possible, with about 175% overrun.—*Chemistry & Industry*, 500-5, Apr. 27, 1957.

Cacao Bean Fermentation

Fermentation is a problem with the Forastero type cacao beans, which account for 90% of the raw cacao produced, than with the Criollo type.

ALGIN CORPORATION OF AMERICA

Marine Colloids

CARRAGEENATES

Gelcarin® Viscarin®

Caralak® Nutricol®

ALGINATES

Sodium Alginate Potassium Alginate

Calcium Alginate Alginic Acid

"The ingredients you use
BY THE PINCH
to make better products
BY THE POUND"

For example:

1 ounce of Gelcarin produces permanent cocoa particle suspension in 125 quarts of chocolate milk.

1/200th of 1 per cent of Gelcarin in ice cream prevents whey separation and ice crystal formation, improves texture and melt-down control.

2.9 grams of Nutricol-200 added to 13 ounces of evaporated milk, hand-whipped and frozen in the family refrigerator, makes ½ gallon of ice cream.

These are some of the things our materials are doing in the food industry today — very economically in small amounts that go a long way.

We also know that these pure marine colloids possess unique characteristics that can cut costs, improve present food products, and even create new products.

Their outstanding effectiveness as bodying, stabilizing, suspending, and gelling agents has become increasingly recognized, and has made them a *must* in many food uses. Less well known is their astonishing versatility — which keeps research departments humming.

Let us work with you . . . and explore with you the possibilities these colloids hold for helping you with an idea you may have for a desired improvement in an existing product, or for the development of a new product.

Write us. Our technical department is waiting to be of service to you.

ALGIN CORPORATION OF AMERICA

MAIN OFFICE
24 State St., New York 4, N. Y. • Tel. WH 4-1193

SALES OFFICES
CHICAGO 5: 600 South Michigan Ave. • WA 2-3829
LOS ANGELES 25: 2024 Westgate Ave. • BR 2-4346

Canadian Sales Representative — Charles Albert Smith Ltd.
356 Eastern Ave., Toronto 8 • 8307 Royden Road, Montreal 9

Advances in Technology

Fresh Forastero cotyledons contain 50-55% fat, 15% polyphenols, the remainder being sugars, starch, proteins, theobromine, caffeine, and cell-wall substances. During fermentation, the polyphenolic catechins are modified and greatly reduced in quantity.

When fermentation starts, the beans are viable but as temperature in the heaps and boxes rises to 95-120F., they are killed. There is considerable evidence to show that an actual germination gets started in the first 24-36 hr. and that this incipient germination mobilizes the enzymes necessary for the fermentation reactions.

Beans that are killed by cold or by heat without allowing them to germinate, produce little or no chocolate flavor.—*Chemistry & Industry*, 543-45, May 4, 1957.

Surface-Active Compounds As Chocolate Emulsifiers

Procedure for producing new surface-active agents is revealed in a recent patent.

Broadly speaking, the compounds are prepared by reacting a polycondensed hydroxycarboxylic acid having at least eight carbon atoms with a polycondensed polyhydric alcohol having at least three carbon atoms. Compounds are useful in preparing and stabilizing emulsions such as the fluid chocolate used in coating ice cream bars.

Polycondensation of the hydroxycarboxylic acids is accomplished by heating under reduced pressure and passing an inert gas through the liquid. The polyhydric alcohols are polycondensed by heating in vacuo with a catalyst. Esterification is brought about by heating the two with a catalyst while passing an inert gas through the mixture. The partial esters thus prepared are good emulsifying and stabilizing agents in water-in-oil emulsions.

Viscosity measurements made at 100F. on samples of a coating showed the ester to be twice as effective as lecithin in lowering the viscosity of chocolate coatings.—U.S. Patent 2,785,978, Mch. 19, 1957.

Continuous Cheese Process

Apparatus has been patented for the continuous production of cheese-forming coagulum in which the essential conditions of the batch process are substantially maintained.

In the new apparatus, metered quantities of heated milk, rennin, and a bacterial starter are quickly subjected to violent agitation to insure a homogeneous mixture. This takes place at the base of a vertical column, the lower section of which is the reaction zone tapering upward to a larger diameter.

As mixture flows upward through the expanding column it becomes quiescent and ultimately forms a viscous body of curd. Reaching top of tapering reaction zone, the curd continues to move upward through column free from internal turbulence and eddy currents. Here the final reaction takes place to transform the material into a firm curd.

At top of column is a cutting grid and rotating knife which cut the curd into pieces of desired size. Curds and whey are then transported horizontally (by screw conveyor) through a pre-cooking chamber to a receptacle where they fall on an elevator and are separated.

Curd particles are discharged from end of elevator and fall through a vertical chamber where they are cooled, washed, and collected to produce cheese.—U.S. Patent 2,781,269, Feb. 12, 1957.

Tetrazolium Salts Used To Check Fish Quality

A newly developed method for assessing quality of fish has been applied to haddock and codling, and could probably be used equally well on other fish or fish fillets.

A test paper with marked-off area impregnated with a tetrazolium salt (2-p-iodophenyl-3-p-nithophenyl-5-phenyltetrazolium chloride, or I.N.T.C.), is moistened and applied to the surface of the fish for 2 min. Then the paper is dried in the air for 15 min.

During the drying a pink to red color (formazan) appears in the I.N.T.C.—impregnated area. The marked area is cut from the paper and the colored formazan is eluted from it with phenolic ethanol and its intensity measured with a spectrophotometer.

When used to test spoilage of North Sea codling stored under laboratory conditions, the 4 phases of spoilage distinguishable by organoleptic tests, bacterial counts, and trimethylamine and total volatile base distillations, were well marked by the use of the I.N.T.C. paper.

In tests made on codling well

WESCODYNE® cleans as it disinfects

for less than two cents a gallon

FOR ALL AREAS

WESCODYNE is a completely new detergent-germicide that contains amazing "Tamed Iodine"®. Increases germicidal capacity three to four times and offers a much wider range of effectiveness than solutions containing chlorine, cresylics, phenolics or quaternaries.

WESCODYNE is also an excellent detergent as well as a powerful sanitizer and disinfectant. Provides fast cleaning action as it disinfects. A time and labor saver.

. . . all at a cost of less than 2¢ a gallon at use dilution!

WESCODYNE is nontoxic, nonstaining and nonirritating to the skin when used as directed. Further, it contains an exclusive "built-in" safety feature. In use, its amber color guarantees the presence of germicidal activity. When this color disappears, a fresh solution must be used. You're always sure of germicidal action!

WESCODYNE is used by leading hospitals throughout the U.S.A. Complies with U. S. Public Health Service recommendations. Leaves no odor. Recommended for almost any sanitizing or disinfecting procedure. Interested? Send the coupon.

LARGEST COMPANY OF ITS KIND IN THE WORLD

WEST DISINFECTING Company

WEST DISINFECTING COMPANY, 42-16 West Street, Long Island City 1, N. Y.
Branches in principal cities • In Canada: 5621-23 Casgrain Ave., Montreal

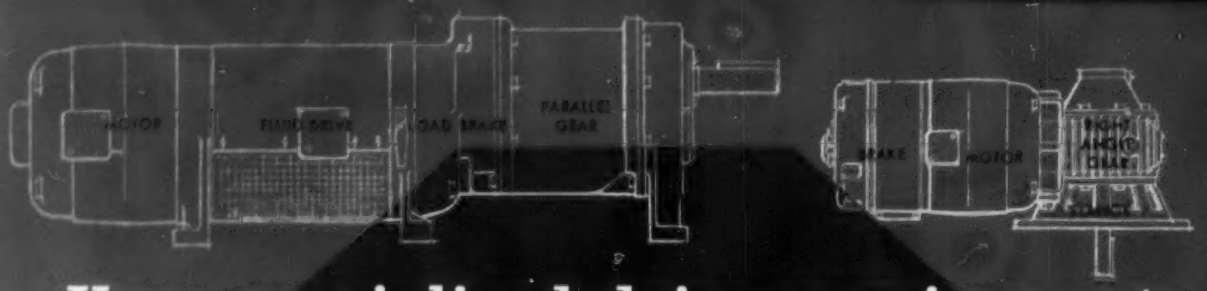
☐ Please send full information on Wescodyne.
☐ Please have a West representative telephone for an appointment.

Name.....

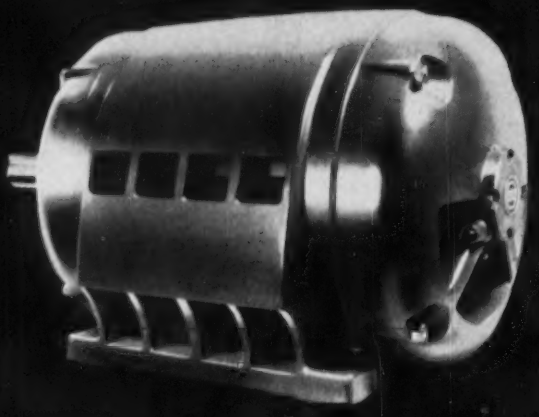
Position.....

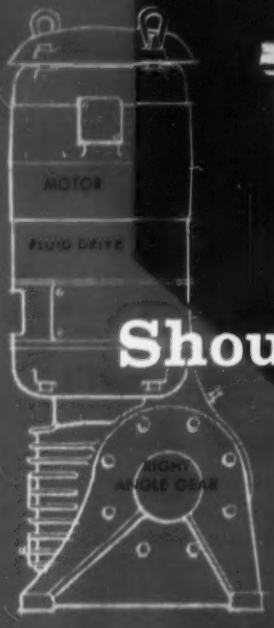
Mail this coupon with your letterhead to Dept. 22

For more data, circle this page number on card at back →

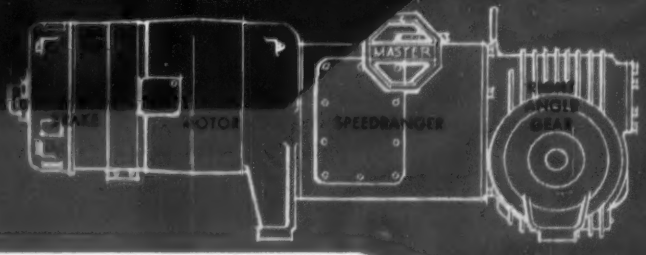


Your specialized drive requirements





Should meet their Master



Master Units Combine into Engineered, Customized Package Drives—Providing the Right Shaft Speed, the Right Construction Features, the Right Mounting. Why Put Up With Makeshift Assemblies?

Engineers and Manufacturers of

Electric Motors	**⅛ to 400 H.P.**
Gearmotors	**⅛ to 125 H.P.**
Variable Speed Drives	**⅛ to 30 H.P.**
Unibrake Motors	**⅛ to 150 H.P.**
Fluid Drive Motors	**½ to 15 H.P.**

Alternating current motors, direct current motors, generators . . . open, enclosed, explosion proof . . . with 5 types of gear reducers . . . with electric brakes . . . with mechanical or electronic variable speed units . . . with fluid drives . . . Master has them all and so can be completely impartial in helping to select the one best drive for you.

MASTER ELECTRIC MOTORS

THE MASTER ELECTRIC COMPANY, Dayton 1, Ohio

washed and stored in clean ice, compared to unwashed fish in dirty ice, the distinction was less clear, probably because of the development of bacteria at a more rapid rate in the "dirty" ice pack. However, the method is considered a promising tool for assessing fish quality since it is fast and does not damage the fish or remove it from sale for the test.—*J. of Science of Food & Agr.*, 222-26, April 1957.

Acceptability of Dried Beef

Tests of dehydrated beef, both minced and as steaks, in comparison with fresh beef cooked and served in the same way, were conducted in a New Zealand Armed Service unit.

Results showed clearly that when minced beef, vacuum-dried in edible fat, is reconstituted and prepared under supervision, it is acceptable at the same level as fresh beef.

Vacuum-dried beef steak is not as acceptable as fresh steak, chiefly because it is a little more fibrous. It is about as acceptable as either fresh or dehydrated minced beef similarly flavored and seasoned.

The dehydrated beef used in these experiments had been prepared from prime ox and packed in 11-oz. cans. Its fat content was 30.6, 43.2, and 47.9% in the three batches served. Moisture contents on a fat free basis were 10.6, 11.5, and 8.2%. One part by weight of dehydrated beef was equal to 2.8 parts of fresh beef.—*J. of Science of Food & Agr.*, 197-205, April 1957.

Acceptable Fermented Cider From Delicious Apples

When apple juice is sweetened to 16% soluble solids and fermented to 5% alcohol, a cider is produced that has proved highly acceptable.

Desired solids can be obtained by: (1) adding 75% solids concentrate to 11.2% juice, or (2) cutting back 75% concentrate to 16%. In the latter case, an improvement in flavor is obtained with a 50-50 mixture of the diluted juice and a 16% cane sugar syrup.

Standardized juice is treated with 1/10% commercial pectinase and clarified, then heated to 190F. and immediately cooled to 80F. It is inoculated with 10% actively growing culture of Tokay wine yeast and fermented at 85F. until a refractometer reading of 8% solids is reached.

Advances in Technology

Cider is cooled to 32F. and filtered, then cooled to 29F. and carbonated in a closed stainless tank. Product may be filled into 12-oz. beer cans and pasteurized by heating for 1¾ min. in boiling water. Taste panel evaluations indicate that an equal mixture of Delicious and McIntosh apples make an acceptable product.—Paper prepared by F. E. Atkinson and J. F. Bowen, Canada Dept. of Agr., Summerland, B.C., presented at annual meeting of IFT, Pittsburgh.

Concentrated Tea Extract

Triple extract of tea in syrup or powdered form suitable for reconstituting into a sparkingly clear cold beverage is the object of a patented process.

Crux of the method is removal of certain tannins and albuminoids which would cause cloudiness in the beverage.

Three extracts are obtained successively by: (a) Cold water, (b) hot acidulated water, and (c) hot acidulated water under pressure. They are combined and concentrated to a syrup, or dried to a powder. The process is applicable to mate as well as to tea.

First step in the process is to sterilize the tea leaves in live steam to: (1) Destroy mold spores and bacteria; (2) inhibit oxidative enzymes, and (3) open the leaves for better cold-water extraction. Steamed leaves should be cooled immediately and extracted with cold water that has previously been boiled and cooled to the desired temperature.

Second extraction is made with water at a 170-195F. acidulated to not over pH 4. This extraction leaves behind certain tannins and albuminoids which, if dissolved, would affect the appearance, taste, and aroma of the beverage.

Third extraction is made with water (acidulated to pH 4) in an autoclave at 15 lb. pressure for 5 min. All extracts are combined and concentrated as desired.—U.S. Patent 2,785,979, Mch. 19, 1957.

Many-Flavored Chips

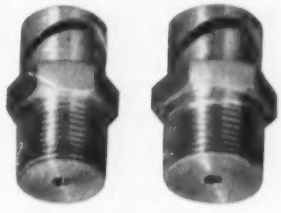
Similar in appearance to natural potato chips, a new food structure has been patented that can be used as a base for fruits, vegetables, farinaceous, and proteinaceous foodstuffs in finely divided condition.

GET MORE OUT OF YOUR SPRAYING EQUIPMENT WITH LESS POWER

For spraying, washing, rinsing and cooling, Yarway Spray Nozzles will improve the efficiency of your spray equipment.

There are no internal vanes or other restrictions to clog or hinder the flow.

Cast bronze Involute-type
(Bar stock also available)



Bar stock Fan-spray-type

Yarway Spray Nozzles are available in two types—the Yarway Involute producing fine hollow cone spray with minimum energy loss, and the Yarway Fan-spray for flat fan-shaped spray with time-saving slicing action for cleaning.

Ask for a free copy—
Bulletin N-618.

YARNALL-WARING COMPANY
127 Mermaid Avenue
Philadelphia 18, Pa.

YARWAY spray nozzles

KLENZADE

COMPLETE SANITATION PROGRAMS For All Food PROCESSING PLANTS

★ Tops for Tough Cleaning Jobs

Klenzade "CBS" Cleaner is the finest industrial detergent available. Superb balance and high wetting agent content provide excellent soil penetration, fat emulsification, and free rinsing.

★ High Temperature Cleaning

Klenzade Flash-Kleen is ideal for steam cleaning jobs. Strips "baked-on" soil residues quickly with the Klenzade Steam Cleaner.

★ Controlling Mineral Deposits

Klenzade Flash-Klenz removes and prevents lime film on canals, troughs, fillers, chutes, etc. Use the Klenzade Alternate System of Cleaning employing alkaline and organic acid detergents.

★ Chlorine Sanitization and Water Treatment

Use Klenzade XY-12 Liquid Sodium Hypochlorite for thorough fast action. Control-packaging in ready-to-use solution. No predissolving — no "pin-point corrosion." Choice selection of chlorine application equipment.

Plant Sanitation Surveys On Request

KLENZADE

"ALL OVER AMERICA"

KLENZADE FIELD SERVICE

A Klenzade field service technician will gladly call on you and help you plan a complete plant sanitation program.

KLENZADE PRODUCTS, INC.

Offices in Principal Cities

BELOIT, WISCONSIN

Advances in Technology

When fried in chip form it provides new edible products in wide variety.

Structure is formed from a hydrophyllic colloid dispersed in water and converted by calcium or magnesium ions from a semi-gel to an advanced gel resistant to higher temperatures and strong enough to withstand cooking. The colloid may be any natural or synthetic material such as algins, pectins, or cellulose ethers.

Artificial potato chips, for example, can be made from (in grams): Algin, 1.0; calcium carbonate, 0.12; potato flour, 25; citric acid, 0.5; and water, 100. The algin is mixed with the calcium carbonate and 10.0g. of potato flour. Remaining 15g. of potato flour and the citric acid form a second mixture.

The water, at 39-42F., is placed in a high-speed mixer, and the algin mixture added and stirred rapidly for 2 min. Then the second mixture is added and stirred 3-5 sec. Within a few minutes, an advanced gel forms that can be extruded, sliced, and cooked in deep fat.

The principle is also applicable to preparation of dessert jellies, using sugar in place of the starchy ingredient, and any desired fruit juice of sufficient acidity.

Here, a mixture of the sugar, calcium carbonate, and colloid is added to a mixer containing water at room temperature. Resulting semi-gel is then fed to a second mixer with fruit juice. Prior to setting of the gel, the mixture is poured into molds where it solidifies and is ready for serving.—U.S. Patent 2,791,508, May 7, 1957.

Gelatin Processes Compared

Gelatins prepared from dried ox sinews (from the bottom of the leg) by 3 different methods exhibited somewhat different properties.

The product from sinew "breeches" having 18.22% nitrogen, contained 18.07% N_2 when prepared by the long acid process, compared to 18.24% by the short acid process, and 17.89% when made by the long alkali process.

Long acid gelatin has an amide N_2 content near to that of alkali gelatin, and titration curves of these two products are the same within experimental error.

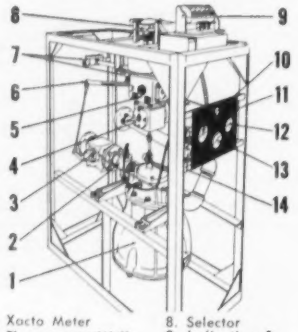
The gelatin precursor, collagen, is a fibrous protein associated with other substances. One of these is a muco-protein which is removed by the alkaline treatment. When col-

Blends many liquids automatically with unexcelled accuracy

Bowser precision proportioners automatically and accurately blend two or more liquids in closed, continuous production.

A simple setting of the percentage selectors provides any variation of blend from ½% to 100%. XACTO, "the world's most widely used meter," assures perfect proportioning of all liquids being mixed, compounded or blended.

SIMPLICITY OF DESIGN SAVES SPACE . . . REDUCES MAINTENANCE



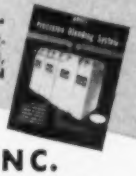
1. Xacto Meter
2. Thermometer Well
3. Inlet Control Valve
4. Differential
5. Control Nut
6. Valve Control Arm
7. Pump Control Circuit & Switch
8. Selector
9. Indicating & Totalizing Dial
10. Flow Indicator
11. Inlet Pressure Gauge
12. Discharge Pressure Gauge
13. Dial Thermometer
14. Discharge Check Valve

DIALS FOR EVERY PURPOSE

Model K — furnishes printed record of quantity dispensed or received for accounting; Model P—delivers predetermined quantities up to 10,000 gallons; Model RP — delivers predetermined quantities, repeating each quantity automatically.

FREE OFFER . . .

Write for full color, 12-page Facts Folder titled, "XACTO PRECISION BLENDING SYSTEM."



BOWSER INC.

1326 E. CREIGHTON AVE.

FORT WAYNE, INDIANA

Safeguard Food against Mold and Yeast Spoilage with SORBISTAT®

Here's a promise of new protection for a wide variety of food products. Extensive tests have proved that Pfizer SORBISTAT (sorbic acid) selectively inhibits the growth of many molds, yeasts and certain bacteria which cause spoilage.

Cheese and cheese products, prepared gelatin, fruit, vegetable, and other salads, and fruit cake are some of the foods for which sorbic acid protection has been evaluated and found effective. The protective value of sorbic acid in pickles, soft drinks, pie fillings, and chocolate syrup is now being carefully analyzed. Reports indicate that in certain cases, sorbic acid is several times as effective as other antimycotic agents now in use.

Most important, since SORBISTAT is a selective growth inhibitor of yeasts and molds, it does not interfere with the normal microbiological curing of cheeses. At normally effective use levels SORBISTAT does not affect the appearance, taste or odor of any food product. It is a stable, easily stored, white crystalline powder that's added to foods as a powder or as an easily prepared solution.

Discover for yourself how SORBISTAT can keep your foods in better condition... and your customers better satisfied! Write for technical literature and sample today.

Quality Ingredients for the Food Industry for Over a Century

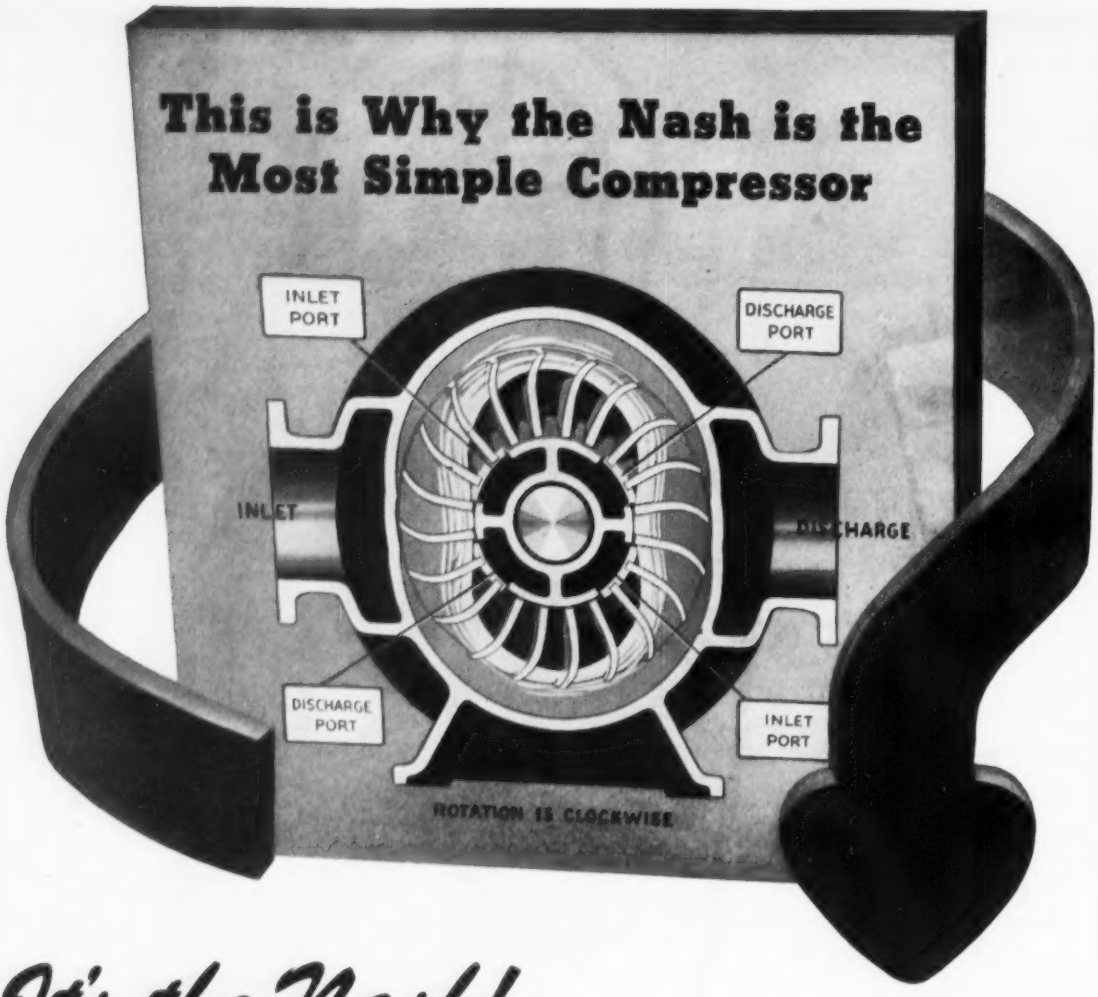
Pfizer

CHAS. PFIZER & CO., INC.
Chemical Sales Division
630 Flushing Ave., Brooklyn 6, N. Y.

Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.

For more data, circle this page number on card at back →

This is Why the Nash is the Most Simple Compressor



It's the Nash!

There are no mechanical complications in a Nash Compressor. A single moving element, a round rotor, with shrouded blades, forming a series of buckets, revolves freely in an elliptical casing containing any low viscosity liquid. This liquid, carried with the rotor, follows the elliptical contour of the casing.

The moving liquid therefore recedes from the rotor buckets at the wide part of the ellipse, permitting the buckets to fill with gas from the stationary Inlet Ports. As the casing narrows, the liquid is forced back into the rotor buckets, compressing the gas, and delivering it through the fixed Outlet Ports.

Nash Compressors produce 75 lbs pressure in a single stage, with capacities to 6 million cu. ft. per day in a single structure. Since compression is secured by an entirely different principle, gas pumping problems difficult with ordinary pumps are often handled easily in a Nash.

Nash simplicity means low maintenance cost, with original pump performance constant over long periods Data on these pumps sent immediately on request

No internal wearing parts.

No valves, pistons, or vanes.

No internal lubrication.

Low maintenance cost.

Saves floor space.

Desired delivery temperature automatically maintained.

Slugs of liquid entering pump will do no harm.

75 pounds in a single stage.

NASH ENGINEERING COMPANY
313 WILSON, SO. NORWALK, CONN.

lagen is soaked in acid all non-collagen substance is removed. The collagen retains its fibrous structure and becomes readily soluble in hot water to form gelatin.

By application of these principles, a pure gelatin can be obtained from ox sinews by soaking them in HCl (300 ml. conc. HCl per l.) for 6 days, followed by washing out the acid and soaking in 10% NaOH for 24 hr. After washing out the alkali and heating to 130F., the sinews were quantitatively transformed into gelatin of Bloom strength over 250, and a viscocity of 250 millipoises. An 18 day lime soak after the acid treatment yielded and even more viscous gelatin. Both gelatins had isoelectric points of pH 4.8.—*J. of Science of Food & Agr.*, 167-73, March 1957.

Cuts Modernizing Downtime

—*Continued from page 58*

Chambersburg, Pa., illustrates this wisdom. Enjoying a steady volume of business, it had to convert to a modernized, mechanized plant with minimum loss of working days.

Every last step was planned. Initially, evaluation of the changeover project (carried out by Reading Pretzel Machinery Corp. engineers, under supervision of E. Groff) disclosed that a section had to be added to the present building to accommodate the new equipment.

After completion of this addition, blueprints were drafted showing the exact location of each piece of machinery. These helped speed the job of the plumbers and electricians in installing the piping and wiring.

The actual conversion was signalled on a weekend. First, the old oven was dismantled, then the remaining floor area was cleared of old equipment. To keep everything in time, word had been flashed to Reading, whereupon the newly completed twisting machine, cooker-salter, oven, and conveyors were loaded on two flat-bed trucks, which headed immediately for Chambersburg.

Despite the number of units and complexity of the job, four men had everything installed and working within three days. And pretzels were coming off the new line by the following Friday morning.

End (*Resume reading on page 59*)

New... Improved

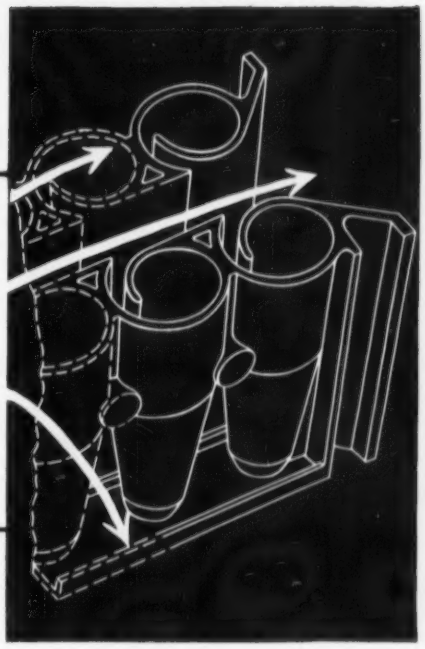
MICROCLONE
DUST COLLECTOR

NEW *casting process* provides smoother interior finish — "Cling-Free" surface.

NEW *inlet design* assures better distribution of air and material.

NEW *flange design* eliminates all protrusions in dust hopper — meets strictest sanitation requirements.

NEW *seal surface design* assures air-tight operation for highest efficiency.



THESE MAJOR DESIGN IMPROVEMENTS on the widely used and highly regarded "Microclone" M-40-A Dust Collector mean ... *higher returns on your investment in food processing equipment.*

WRITE TODAY ...
for more information and descriptive literature.

P. O. BOX 2520 — dustex CORP. — BUFFALO 25, N. Y.

FREE ... A NEW BOOKLET ON cutting production costs

Our new booklet, *"How 35 Manufacturers saved with USS Cyclone Processing Belts,"* contains 35 actual case histories of savings on production costs, materials, time, space, breakage and labor ... through use of Cyclone Belts.

USS Cyclone Steel Processing Belts are available in many sizes, types and finishes. In plants all over the country they are paying for themselves again and again in higher production rates, reduced manual labor and increased efficiency. One or more of these 35 case histories are bound to show how you, too, can save with a Cyclone Belt. Be sure to mail the coupon for your free copy today.

CYCLONE FENCE DEPARTMENT
AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
WAUKEGAN, ILLINOIS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

MAIL THIS COUPON TODAY

Cyclone Fence, Dept. H-77
Waukegan, Illinois

Please send me your big, illustrated Belt Booklet. No charge or obligation.

Name .....
Company .....
Address .....
City ..... State .....

UNITED STATES STEEL

For more data, circle this page number on card at back →

QUESTIONS & ANSWERS

THIS MONTH'S PROBLEM

Fuel Savings

Question—With the recent rise in fuel prices, our profit margin has been further shaved. Consequently, our management has intensified efforts to reduce costs. Someone has suggested that a "heat balance" study should prove helpful. Trouble is we don't know just what this is or how to go about it.

But we don't want to miss any reasonable opportunity to make savings. Can you give us some pointers?

MAY PROBLEM

Wants To Freeze Salads

Question—Do you know if frozen egg, ham, chicken and tuna salads are now being marketed? Have you formulas for these four types of salads that might be frozen and packed in 8-oz. polystyrene containers with polyethylene lids? Will they hold up during freezing and O-F. storing?

Answer—We have not seen these salads in commercial production.

But here are some basic formulas that you can modify to suit your requirements. We suggest you store these salads below O-F. for at least 6 months, and evaluate them at 2 to 3-week intervals until they are commercially unacceptable:

Egg Salad

Boiled eggs, finely chopped	6 lb.
Mayonnaise	30 oz.
Vinegar	2½ oz.
Salt	⅞ oz.
Ground pepper	⅛ oz.
Paprika	⅛ oz.

Ham Salad

Cooked, diced ham	5 lb.
Mayonnaise	10 oz.
Pickle relish	10 oz.
Worcestershire sauce	2½ oz.

Chicken Salad

Cooked, diced chicken	5 lb.
Mayonnaise	30 oz.
Diced onions	¼ lb.
Diced celery	1½ lb.
Salt	⅝ oz.
Pepper	⅛ oz.

Tuna Salad

Chopped tuna	5 lb.
Mayonnaise	10 oz.
Diced onions	¼ lb.
Chopped parsley	2 oz.
Salt	⅛ oz.
Pepper	¼ oz.
Lemon juice	¼ oz.

Checking Retort Crates

In the May '57 issue of FE (p. 158), you outlined a positive method for identifying retort crates that had or had not undergone thermal processing.

I'd like to suggest another method that would satisfactorily answer the requirements. It's the use of "Cook-Chex" indicator tags (Cook-Chex, N. Hollywood, Calif.), which are attached to crates going into retorts. Color of these tags changes upon heating, which is a check on whether or not the crates have bypassed sterilization in pressure retorts.—*A. L. Arighi, Production Service Dept., Continental Can Co., Inc., Hazel-Atlas Glass Div., Oakland, Calif.*

Question—Anyway I can warm up cold flour that's shipped to me during the winter months?

Answer—Try bringing the flour up to room temperature by circulating it from one storage bin to another.

HOW TO DO IT?

Readers are invited to submit to FOOD ENGINEERING answers to question, "This Month's Problem." Selected answers will be published with credit (unless you specify otherwise). We pay space rates.

JUST ASK US

Subscribers also are invited to send in food engineering questions. We undertake to provide answers free, to the best of our ability. We do not undertake costly investigations. Give full information and your name. Your identity will not be disclosed.

Write to Questions & Answers Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.

Oils Vs. Grease

Question—We'd like to be brought up to date on getting the most for our lubricant dollar. We use a lot of pumps, and would like to learn what we can about oil and grease for pump-bearing lubrication.

Answer—Although oil or oil-mist are admittedly better from the standpoint of lubrication only, the trend (by machinery manufacturers) is toward grease-lubrication of ball bearings. For example, in electric motors, grease is the standard lubricant for integral-horsepower units in the NEMA (National Electrical Manufacturers' Assn.) series of all manufacturers.

Here are some difficulties one must face with oil lubrication:

Usefulness of oil as a lubricant is reduced by contamination. Moisture, fumes, dirt, or dust—even in minute quantities—can rapidly reduce bearing life. Unprotected oil-lubricated equipment placed out of doors is particularly susceptible to contamination.

Centrifugal pumps, because they are handling liquids adjacent to the bearings and in locations that often are constantly damp and humid, are an example of mechanical equipment that requires many precautions to prevent contamination of the oil.

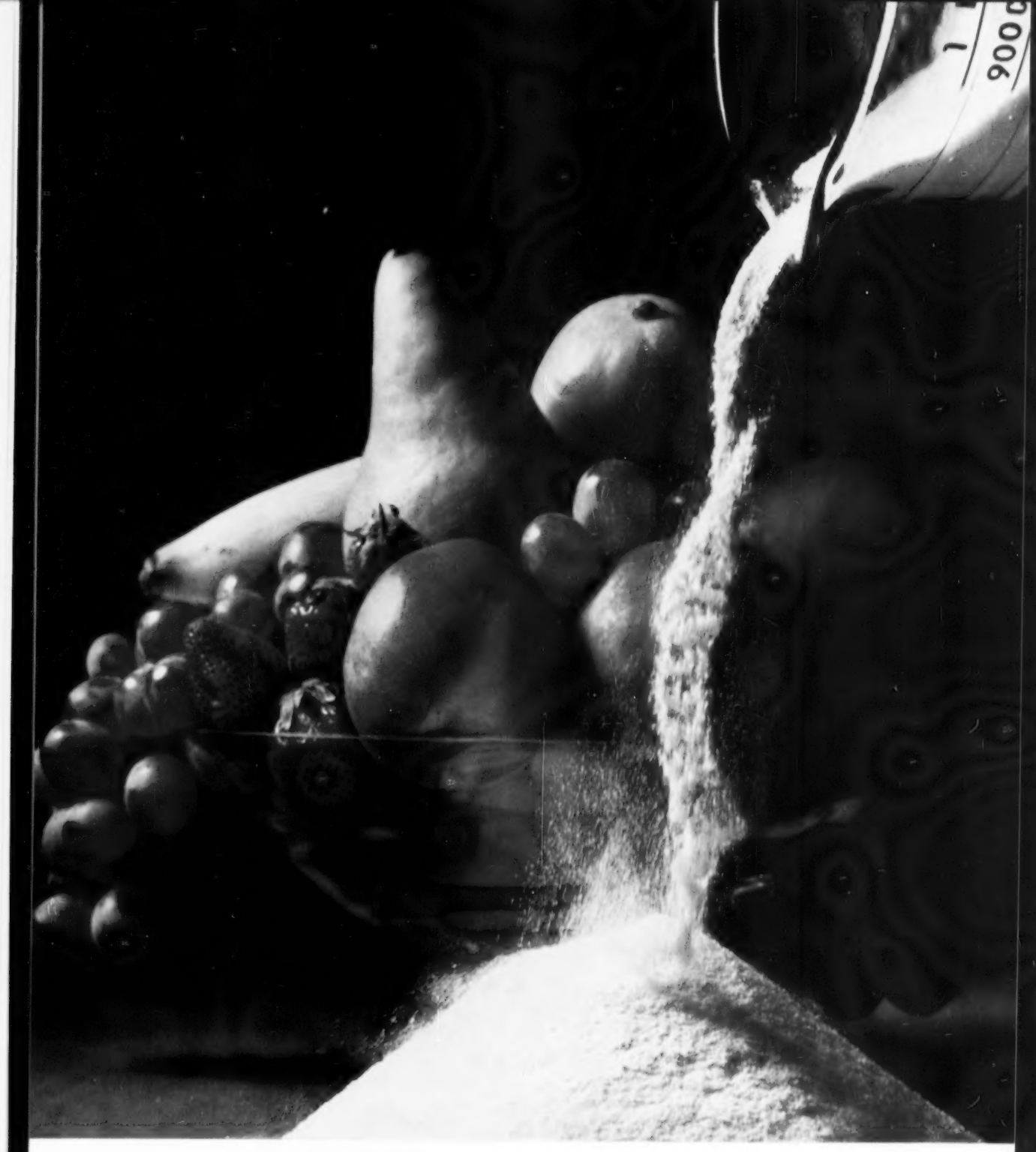
Maintenance of proper oil level is difficult. Static level of oil, relative to a ball bearing for flood lubrication, should be such as to cover ½ to ⅔ of the lowermost ball.

In equipment where more than one ball bearing is lubricated from the same oil reservoir (and usually bearings within such housing are not the same size), it is difficult to establish and maintain an oil level not too low for smaller bearings and too high for larger ones. Result of too low or insufficient lubrication is obvious. Too high an oil level produces excessive heat.

Desired oil level can be maintained with constant-level devices, provided the machine is dead level lengthwise and crosswise. Variations from dead

Q.—Do you have a formula for a top-quality horse-radish sauce?

A.—Whipping cream, 4½ lb.; grated horse-radish, 3½ lb.; vinegar, ½ oz.; and salt, 1½ oz.



NEW LIFT... LONGER LIFE FOR YOUR PRODUCTS WITH FIRMENICH POWDERED FLAVORS

New and improved techniques of process drying, exclusively employed by Firmenich, yield powdered flavors that flow freely, are dust free, and give you the finest precision in flavoring your products. These important developments in quality flavoring will improve the taste appeal of your products . . . extend their shelf life . . . give them package-to-package uniformity that captures customer preference. Samples of Firmenich Powdered Flavors, with technical information on their practical application, on request.

FIRMENICH INCORPORATED

FIRMENICH & CIE.
SUCCESSEURS DE
CHUIT, NAEF & CIE.
GENEVA SUISSE

SANITILE WALLS

at less than 1/15th the Cost of TILE

Enjoy the sanitary advantages of tiled walls and ceilings for only a few cents a square foot. SANITILE can be applied over cement, plaster, brick or wood by brush, spray or roller. Notice the high-gloss, glass-smooth surface that resists fungus, mold, grease, steam and repeated washings. Imagine the sparkling appearance of your processing rooms and coolers with a ceramic-like SANITILE surface, without joints or crevices to catch contamination and bacteria. Think of the savings over repeated paintings — on maintenance and sanitation costs. Write today for facts.

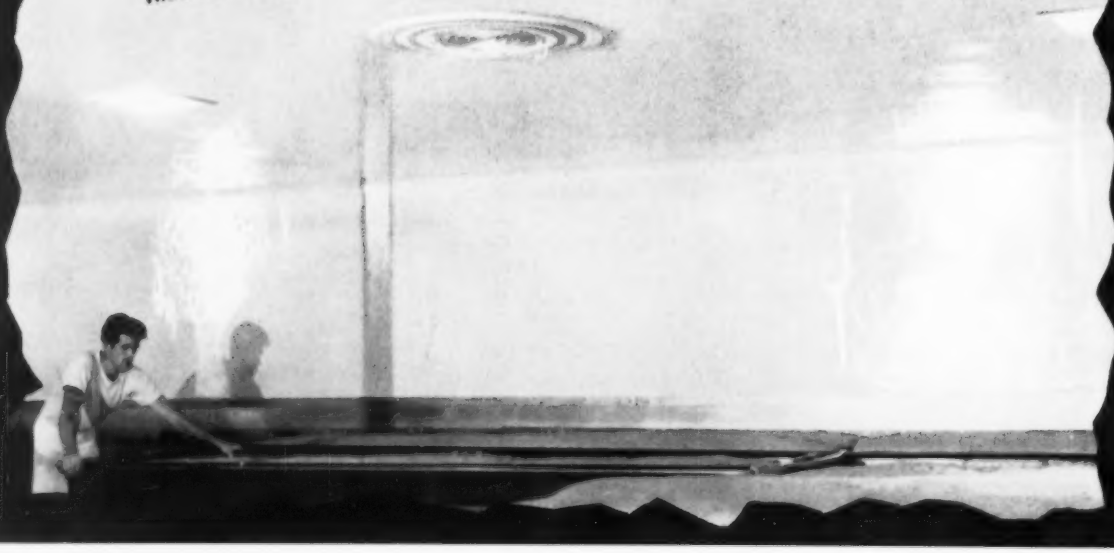
RESISTS
Steam, Condensation, water, acids, alkalies, oils & greases

RESISTS AND PREVENTS
Fungus, mold and bacteria

Serving the food industry since 1913.

MASTER MECHANICS

The MASTER MECHANICS Co., 2097 Columbus Road, Cleveland 13, Ohio
The Master Mechanics Chemical Co. (Canada) Ltd., 88 Richmond Street, Toronto



level upset the established oil level. When out of level lengthwise, distances between actual and desired oil levels increase as bearings become further apart. On portable units, problem of maintaining levels is greatly magnified.

Grease almost completely eliminates problems encountered in oil lubrication. A grease barrier ahead of the bearing prevents, to a great degree, penetration of moisture, fumes, dirt, or dust to the bearing. (This cannot be said to the same degree of the so-called "pre-lube" or "sealed-for-life" ball bearings.)

Grease in a bearing cavity is static in comparison to oil. It is not churned through the bearing (as is oil), so that contaminants don't pass through bearing to cause wearing and pitting.

Grease presents no problem on lubricant level. In fact, equipment normally designed for horizontal operation and using grease can, in most cases, operate vertically with no changes required in the lubrication system.

However, industry has applied the axiom of "too much is better than too little" in grease lubricating of ball bearings. As a result, it has lost millions of dollars annually in production and maintenance through over-greasing or over-lubricating.

Grease inserted under pressure in a bearing cavity, with no relief to prevent too much lubricant, causes excessive heat. Under this heat, grease breaks down, carbonizes, and loses its lubricating properties.

In recent years, three things have been responsible for reducing the over-greasing hazard.

1. Machinery builders have incorporated reliefs in machine designs to permit retention of only a predetermined amount of grease in bearing cavity.

2. Technology of grease has improved immensely. Sodium-, and more recently, lithium-base greases, have greatly improved quality of lubricants. These new greases withstand higher temperatures and do not turn acid or rancid, with resulting pitting of bearing to cause failure.

3. Education and lubrication programs instituted in industry by technical groups and lubrication engineers have provided a realistic approach to the problem of grease over-lubrication. No longer do lubricating crews grease bearings every day and, in some industries working 24 hr. a day, grease bearings three times during that period.

Centrifugal pumps ordinarily require additional grease only after 2,000 hr. of operation. On continuous service, this is approximately every three months. For preventive-maintenance reasons, annual overhaul and inspection of pumps are recommended. At this time, bearings and housings should be completely cleaned of used grease and replenished with new lubricant.

For such pumps with speeds to 3,600 rpm., grease possesses all the necessary lubricating qualities. With intelligent use, it is a good universal lubricant for pumps.—*Philip J. Olmstead, Chief Engineer, Goulds Pumps, Inc., Seneca Falls, N. Y.*

By-Passing Operations

Question—For many years we have canned pork and beans, using the conventional process of soaking for several hours, and then blanching in a tubular-type unit. We are considering setting up a new line, but find that cost figures for stainless equipment are high.

Thus, we are wondering if it is practical to can pea beans without soaking and blanching.

Answer—It is our understanding that it is possible to eliminate a long soaking period and a regular tubular blanch, providing proper precautions are taken. It is not simply a matter of omitting these operations and carrying on the rest of the process as before.

First, adequate provision for washing and destoning is essential. Your present soaking and handling doubtless remove objectionable foreign material. Some other means would have to be provided.

Second, since the beans will no longer have an opportunity to swell before entering the can, allowance for this must be made in the bean-filling operation. This fact increases the importance of maintaining very close control of fill.

Obviously, slight overfills of beans, which could be permitted with soaked blanched beans, could no longer be tolerated because bulged cans might result as swelling occurs during retorting. It would be our suggestion that level control in the bean-filler hopper be attempted through automatic means or, at least, through a system of high- and low-level warning signals to guide the machine attendant.

A further help in this regard might be an X-ray inspection device which would be capable of checking the height of bean fill in each can before sauce is added.

Final point you will have to watch is the necessary change in retort times and temperatures. Of course, these factors must be worked out for each can size and product.

If you can surmount these special problems, it should be possible to eliminate the cost of soaking tanks and blancher. However, this equipment saving will not be as great as you estimate if steel equipment is substituted for stainless steel. We understand that the former is quite generally used, and further study might indicate that it would also be acceptable in your case.

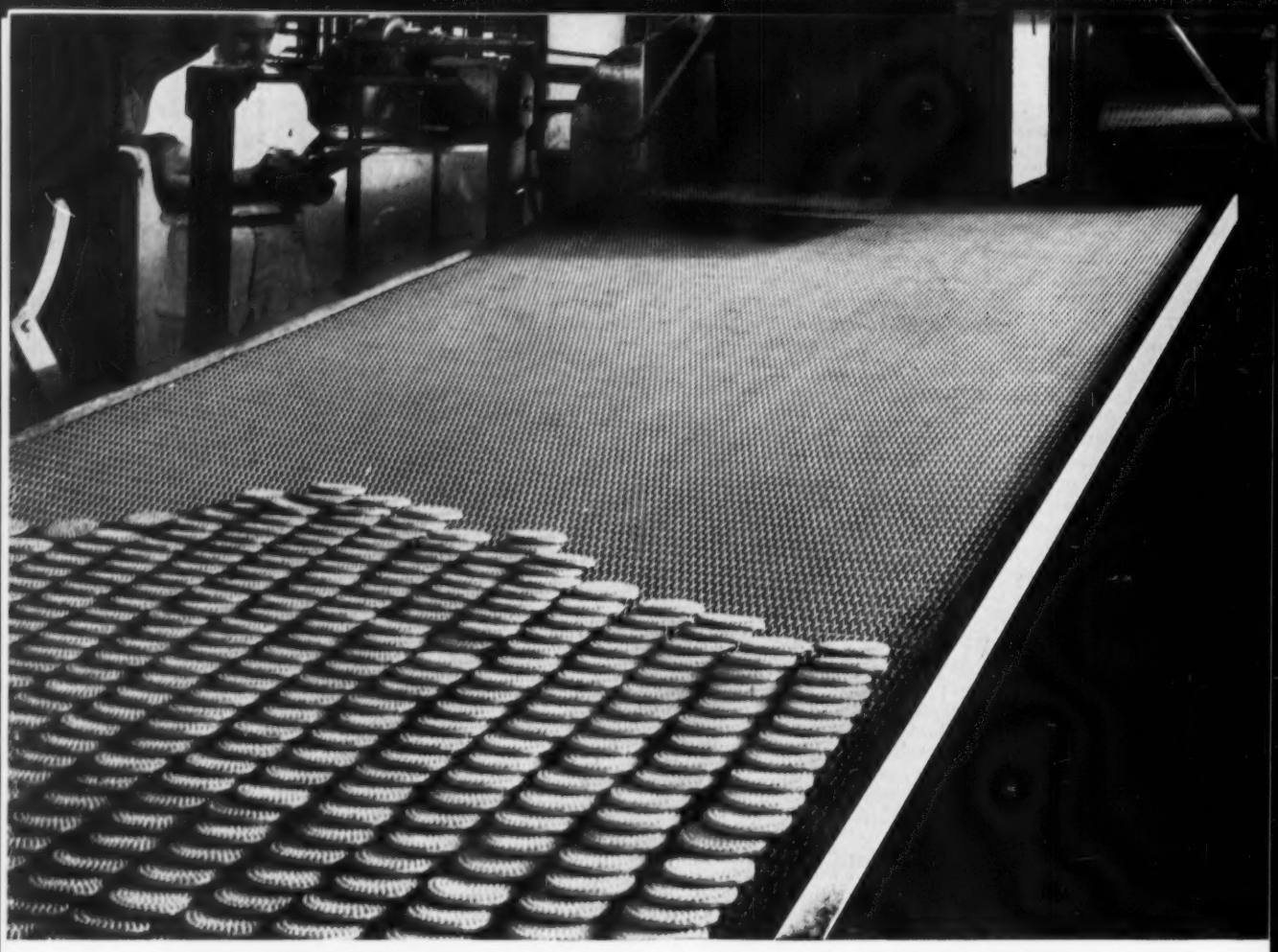
Stock From Beef

Question—In making beef stock, which is the basis of our soups and gravies, we use marrow and beef bones. If only boneless beef were to be used, how much meat would be needed to obtain the same strength of beef stock?

Answer—We don't know offhand how much beef you would have to use in place of the marrow and bones you are now using to obtain the same amount of stock. But you can determine it this way:

Cook down a certain amount of meat (say two pounds) in a sufficient amount of water. After boiling the beef, dilute the stock until it is the same strength as that you are now getting from marrow and bones, and then measure the amount of stock you have. You already know the amount of stock you obtain per pound of beef and bone, and you can now calculate the amount of stock obtained per pound of beef alone.

The ratio between the amount of stock per pound of marrow and bone and the amount of stock per pound of beef will enable you to calculate the amount of beef to substitute for marrow and bone in preparing your stock.



Millions of Megowen Educator cookies and crackers are cooled every day on Wissco Belts. The open mesh design assures rapid cooling because it exposes the top, bottom and sides of each item to cool air, thus greatly retarding inner package deterioration.

FAMOUS NAMES
ride on WISSCO BELTS
Megowen Educator Food Company • Lowell, Mass.

The story of Wissco Belts is best told by their users. For example, one of the nation's leading bakers, Megowen Educator Foods, reports:

"Our six Wissco stainless steel spiral belts have enabled us to double the shelf-life of our products by assuring rapid, complete cooling before packaging."

According to Mr. W. E. Megowen, Vice President in Charge of Production, "This doubled shelf-life has enabled Megowen Educator Foods to eliminate costly merchandising operations including frequent service calls on dealers and a high percentage of returned goods.

"An additional advantage—extremely important in the consumer-sensitive food market—is that the efficient Wissco Belt cooling operation has greatly reduced the possibility of poor quality merchandise reaching the customer.

"Since we started using them in 1938," concludes Mr. Megowen, "our Wissco Belts have helped us maintain an uninterrupted production flow. For temperature resistance, durability and ease of maintenance, we consider Wissco the best available belt."

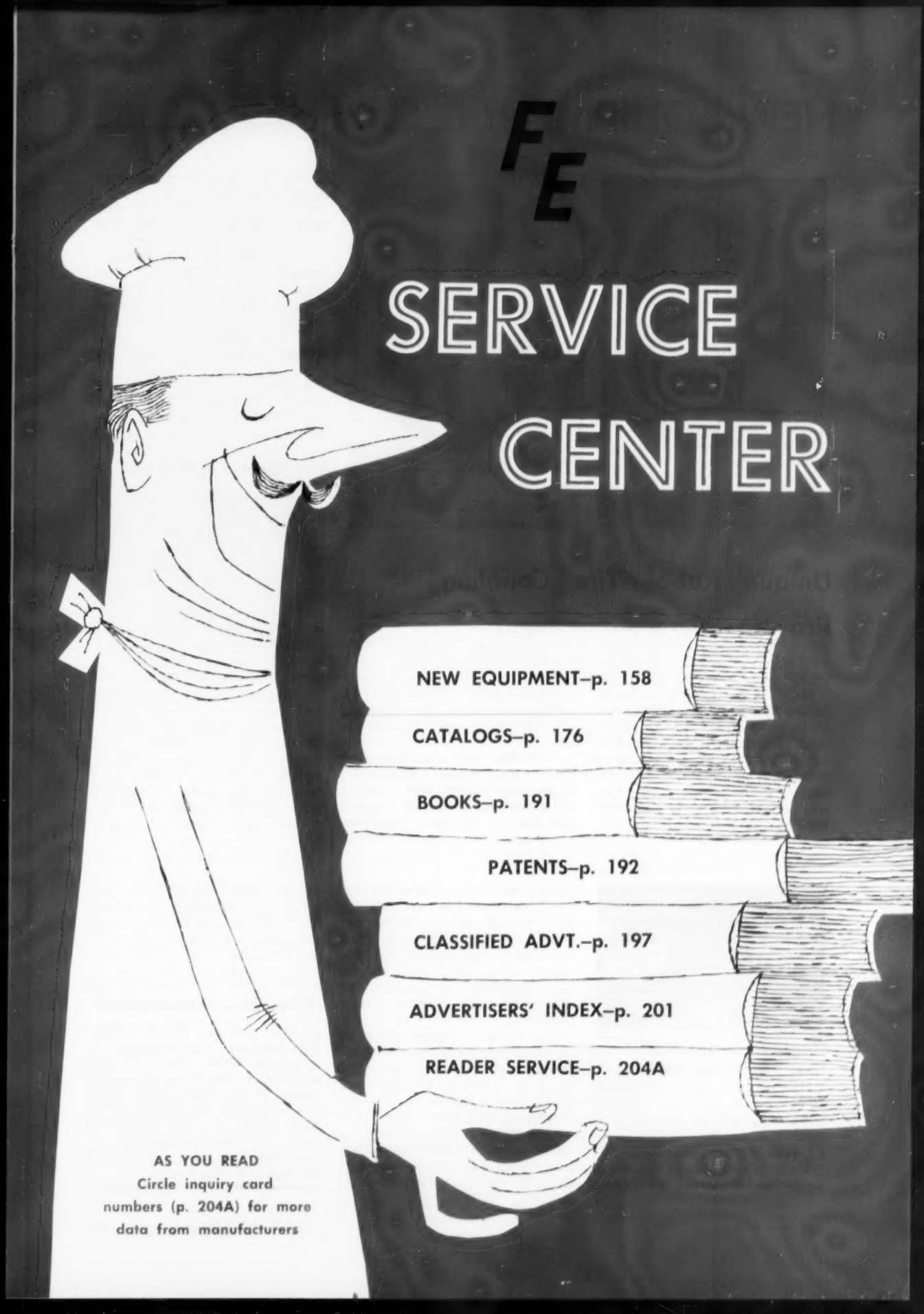
Chances are that Wissco Belts can help you solve your processing and conveying problems, too. Get the complete story without obligation... just contact your nearby CF&I sales office.

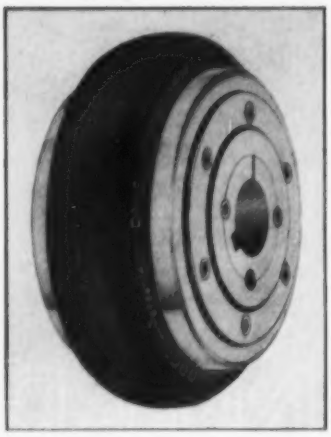
WISSCO BELTS
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

CF&I

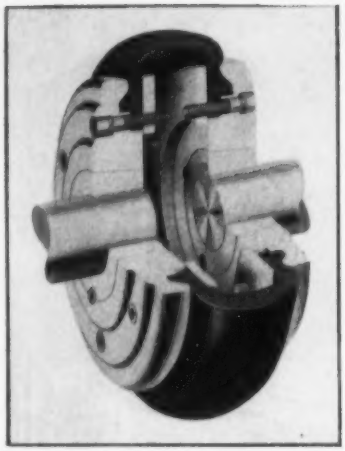
THE COLORADO FUEL AND IRON CORPORATION • Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo • Chicago • Detroit
New Orleans • New York • Philadelphia • CF&I OFFICES IN CANADA: Toronto • Montreal

4537


FE
SERVICE
CENTER
NEW EQUIPMENT–p. 158
CATALOGS–p. 176
BOOKS–p. 191
PATENTS–p. 192
CLASSIFIED ADVT.–p. 197
ADVERTISERS' INDEX–p. 201
READER SERVICE–p. 204A
AS YOU READ
Circle inquiry card numbers (p. 204A) for more data from manufacturers



SIMPLE IN DESIGN, new cushion coupling consists of flexible tire clamped between two hubs.



CUTAWAY VIEW shows how tire is held between flanges and clamp rings of the shaft-mounted hubs.

Unique "Rubber-Tire" Coupling Provides Many Advantages

Hailed as an entirely new concept in flexible couplings—and extremely simple in design—is a tire with synthetic tension members bonded in natural rubber. This development stems from recent advances in production of automotive tires, which are engineered to carry tremendous loads at high speeds.

Known as Para-Flex, units are available in ratings of 4-600 hp., and offer these significant advantages:

They take angular misalignment up to 4 deg.; parallel misalignment, up to ½ in.; and end float up to $\frac{5}{16}$ in., depending on size of coupling and duration of stress. And they handle these conditions singly or in any combination.

Cushion shock loads and curb torsional vibration, thus protecting both driver and driven machine.

Are quickly and easily installed. Require no maintenance.

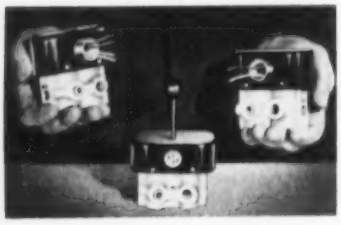
The coupling consists of this tire clamped between two hubs that are mounted on the shafts to be coupled. The flexible member is held between the hub's flanges and clamp rings.

Both hubs are machined to take maker's bushings (Taper-Lock), which provide a shrunk-on fit on the shaft. Also they permit quick and easy application to shafts of different diameters without costly reboring.

A transverse split, molded into the tire, permits easy installation and enables replacement without moving driver or driven machine. To replace the flexible member, loosen cap screws just enough to remove the tire and fit a new one in place. Even in confined spaces, this simple operation takes only a few minutes.

Unit requires no lubrication because there is no metal-to-metal contact. And safety is promoted by flush design—all cap screws are countersunk, metal surfaces are finished, and there are no protruding parts. In addition, coupling is designed to occupy a minimum of space on the shaft.—*Dodge Mfg. Corp., Mishawaka, Ind.*

Circle 158A on Reader Service Card



Simplified Design Marks New Fast-Acting Valves

Here are three new valves designed for fast, smooth operation of double-action cylinders, and other applications involving controlled flow of air, water, oil, and refrigerants.

Units (Quick-Dump) are 4-way, 5-port models having no internal springs, packings, pistons, or sliding metal-to-metal contacts. Valving action is said to be ultra-fast and positive, giving smooth flow, dead-seal closing, large capacity, and prolonged service life. Two of the valves are electrically operated, and the third (center in photo) has a hand lever.

Electric valves employ new-type electro-magnetic armatures for speed, power, and durability. Armature travel in actuating the valve has been cut to 0.022 in. to eliminate hammering and reduce wear.

Unit at left is a "momentary-impulse" type. A single electric impulse opens one valve section and closes the other. Valve then stays in this position until a second electrical impulse reverses it. Electricity is used for impulse only, no current being required to hold in either position.

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service Postcard — back of book. Then sign at the bottom and mail. For your convenience, too, these items are listed and keyed in the Reader Service Section.

Valve at right (of the "Fail-Safe" type) holds as long as current is on, and returns to normal original position when electricity is shut off, or if an electrical line failure occurs.

The hand-lever model is designed for bench, machine, or production line. Lever action requires only finger-tip touch. Short forward or backward movement permits rapid, easy valve action, and unit holds in either position of lever.—*Humphrey Products Div., General Gas Light Co., 202 No. Park St., Kalamazoo, Mich.*

Circle 158B on Reader Service Card

Versatile Speed Reducer Ups Operating Efficiency

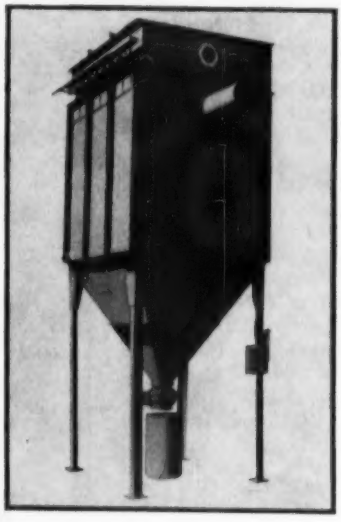
Offering mounting flexibility, increased safety, and lower maintenance costs, this new shaft-mounted speed reducer is termed ideal for applications where complex multiple-reduction-belt drives or chain types are required.

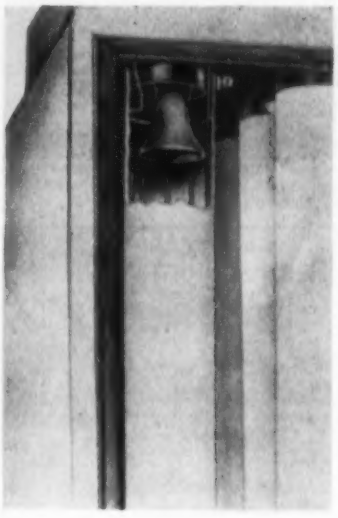
Ratio changes can be made in minutes simply by changing pulleys, and a wide variety of pulley sizes adapts the unit to a broad range of speeds, thus minimizing required inventory. This equipment is available in most ratings from ¼-40 hp. at output speeds of 10-420 rpm. Single- and double-reduction ratings provide ratios of 5- and 15-1.

Unit is easily mounted on driven machine, and a standard drive motor may be located on ceiling, floor, or wall, in virtually any convenient position.

Compact and light, reducers have 360-deg. mounting range around the driven shaft, and are adaptable to a wide variety of shaft diameters.—*General Electric Co., Schenectady, N. Y.*

Circle 159A on Reader Service Card





No Internal Moving Parts in Self-Cleaning Dust Filter

Called a major advance in dust collection, this high-capacity unit operates without internal moving parts, thus it greatly reduces maintenance.

Furthermore, it offers a radically new and efficient method of continuous filter cleaning, again employing no moving parts.

Typical applications include size-reduction operations, spray-drying, and filtering of dust-laden gas streams. With dust having 0.1 micron ultimate particle size, collection efficiency averages better than 99.9% on air carrying a dust load of 50 gr. per cu. ft.

Collector (Mikro-Pulsaire) consists of cylindrical filter elements, either 4 or 6 ft. long, and enclosed in a dust-tight housing. Dust-laden air enters through a side inlet, and clean air is withdrawn from inside the elements by an air circulating system. Most of the dust goes directly to a bottom discharge, the balance being retained on outside surfaces of filter elements. Air flow is constant and there is uniform pressure drop across the collector at all times.

Cleaning of filter surfaces is accomplished simply by momentarily introducing a jet of high-pressure air through a specially contoured venturi (right photo) mounted above each filter cylinder. This primary air pumps additional air (jet-pump principle), thus produces a reverse flow that effectively dislodges dust clinging to outside surfaces. Cleaning-air requirements range 1-2 cfm. at 60 psig.

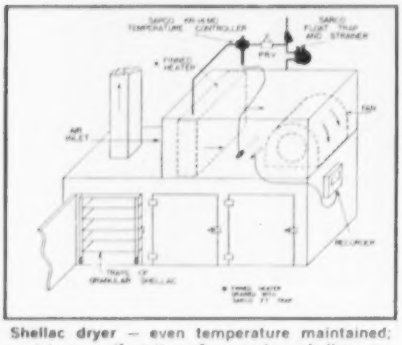
A single tube is cleared at a time, which permits continuous flow of dust through the collector. Jets are controlled by solenoid valves and actuated by an electric timer. Latter is adjustable simply by turning a screw, thus cleaning cycle can be varied to meet different load conditions. Units require no lubrication except for that concerned with accessory equipment (discharge airlocks, fans, motors).

Absence of internal moving parts permits handling of a wider range of materials, including abrasive types, and minimizes explosion hazard. In applications up to about 180F., felt is used for filter bags. However, a variety of other materials enables higher operating temperatures.

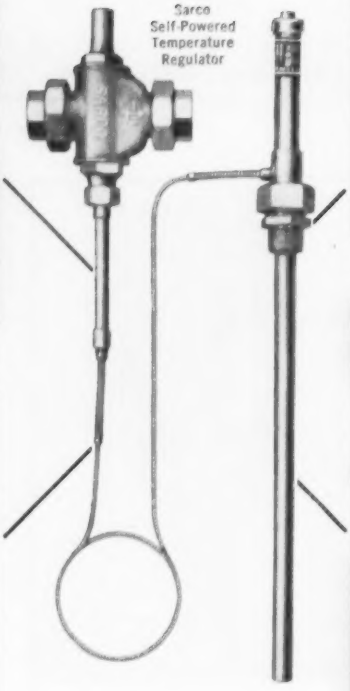
These compact units are available with 9, 20, 30, and 48 filter tubes. Capacities range 400-5,000 cfm. of dust-laden air. Beyond that, modular construction permits assembly in multiples of 48-bag units for handling larger air volumes.—*Pulverizing Machinery Div., Metals Disintegrating Co., Chatham Rd., Summit, N. J.*

Circle 159B on Reader Service Card

Water storage tanks — Sarco self-powered temperature controls on service water storage tanks from twin heaters.

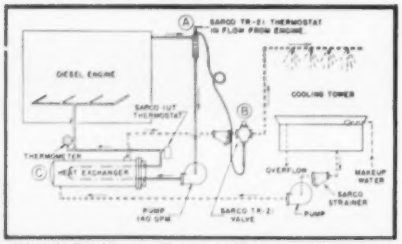


Shellac dryer — even temperature maintained; moisture uniformity of granular shellac accurately controlled — by Sarco self-powered temperature control.

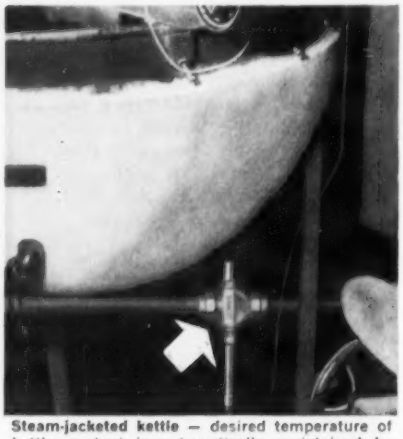


Sarco
Self-Powered
Temperature
Regulator

FOR YOUR INDUSTRY
Chemical Processing • Metalworking
Food • Textile • Paper
Oil Refining • Others



Diesel Engine — Sarco self-powered temperature controller used on diesel engine cooling system. Also ideal for compressors.



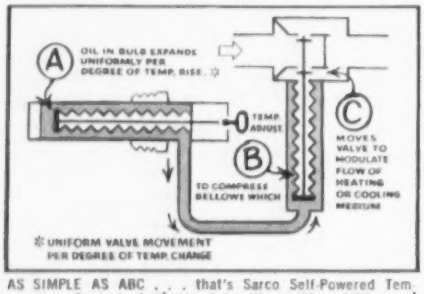
Steam-jacketed kettle — desired temperature of kettle content is automatically maintained by Sarco self-powered temperature control. Steam waste, uncertainty of manual control eliminated.

How to get Automatic Temp. Control that's simple, dependable, inexpensive

HERE'S the way to get rid of uncertain, time-wasting manual temperature control . . . *throughout* your plant. And without investing in complicated, costly temperature control equipment.

These SELF-POWERED Sarco controls are inexpensive, simple, dependable, accurate. They can be used for 85% of your jobs. ½" size costs only about $100!

Thousands of these Sarco controls are giving dependable, accurate service for firms such as Colgate-Palmolive Co., Sinclair Refining Co., Swift and Co.


A
OIL IN BULB EXPANDS UNIFORMLY PER DEGREE OF TEMP. RISE.*
TEMP. ADJUST
B
TO COMPRESS BELLOWS WHICH
C
MOVES VALVE TO MODULATE FLOW OF HEATING OR COOLING MEDIUM
* UNIFORM VALVE MOVEMENT PER DEGREE OF TEMP. CHANGE

AS SIMPLE AS ABC . . . that's Sarco Self-Powered Temperature Control. A thermostat with capillary tubing and a valve . . . that's all there is to it!

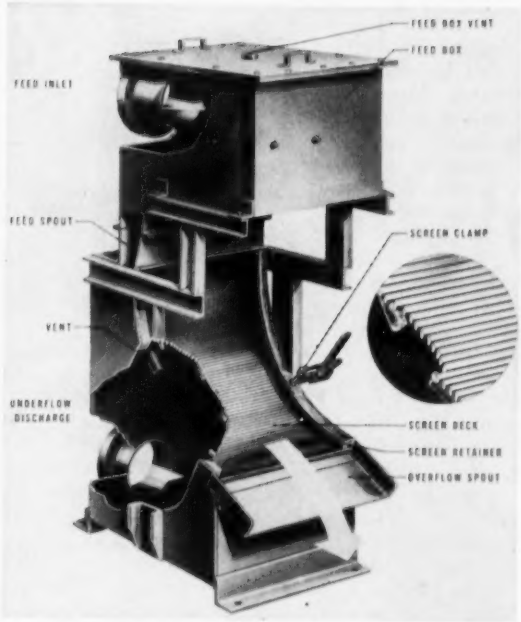
SARCO SELF-POWERED TEMPERATURE CONTROLLERS
—need no power source

1. Self-Powered — no compressed air or electricity needed.
2. Easy to install — by any pipe-fitter.
3. Self-contained — no exposed mechanism. Packless valve.
4. Simple — no gadgets that take a technician to read and repair.
5. Not affected by cross-ambient temperatures or elevation of the bulb.

Send for Bulletins: No. 620 — Self-powered Temperature Controls. No. 710 — Self-powered Cooling Controls. No. 1025 — Electric Indicating Temperature Controls. Sarco Company, Inc., Empire State Bldg., New York 1, N. Y. 2208-B

SARCO
Automatic Temperature Control

ELECTRIC INDICATING AND SELF-POWERED TEMPERATURE CONTROLLERS • STEAM TRAPS • STRAINERS



New Wedge-Bar Stationary Screen Provides High-Capacity Separation

Efficient handling of high flow volumes is reported for a new line of compact stationary screens for continuous wet screening of slurries containing non-fibrous solids. Processing of corn starch is a typical application.

Available in four sizes 1-4 ft. wide, units (DSM) are particularly adaptable to separations in the 8-48 mesh range. Capacities range 200-500 gal. per ft. of screen width per min. on 8-48 mesh separations, actual performance depending upon material being handled.

Basically, the screen (see photo) is a concave, horizontal-wedge-bar type secured in a stationary housing, an integral part of which is a feed box equipped with an inlet port and feed spout. Latter serves to distribute incoming slurry across full width of screen, so that feed strikes the curved surface tangentially. Undersize material is collected in lower part of housing and is discharged through a port, while oversize product flows across a lip at base of screen.

Particle size separation is controlled primarily by width of openings between the stainless wedge bars. Distance between each bar is about twice the diameter of the largest particle desired in the screen undersize. As incoming slurry flows by gravity across the concave arc, a layer containing undersize material is deflected downward by the bar.

Remainder of the slurry passes across face of bar. As this stream strikes edges of succeeding bar, additional layers are sliced off until only oversize solids remain. These larger particles do not pass through, but are deflected upwardly to the discharge lip.

Unit's high capacity is attributed to special design that prevents blinding of screen. Operating costs are low because no power is required, and absence of moving parts minimizes maintenance.—*Dorr-Oliver Inc., Barry Pl., Stamford, Conn.*

Circle 161A on Reader Service Card

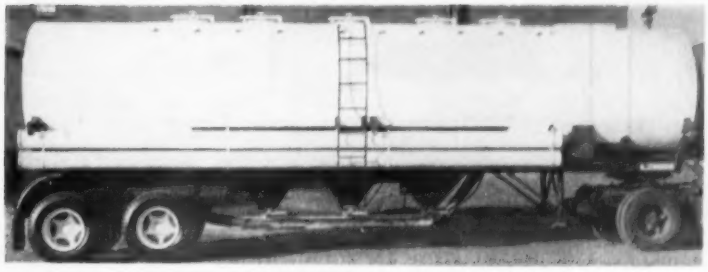
Wood-Fiber Siding Offers Structural Advantages

Although it closely resembles wood, this new siding has no structural or surface grain, knots, or slivers. Thus it will not split or crack from nailing.

A wood-fiber product (Primed Siding), it is used as vertical or horizontal siding, and can be easily worked with ordinary wood-working tools. Prime painted at the factory on all sides and edges, it resists paint blistering. A special edge construction prevents water from flowing back behind the siding.

Product is available in three forms: Horizontal lap application, ½-in. thick, 12 in. wide, and in 8, 12, or 16-ft. lengths; vertically-grooved siding, ½-in. thick, 4x8 ft., with shiplap joints; and primed siding without grooves, 4x8 ft.—*Minnesota and Ontario Paper Co., 500 Investors Bldg., Minneapolis.*

Circle 161B on Reader Service Card



Self-Unloading Trailer Handles Bulk Solids, Liquids

This versatile self-unloading trailer hauls either bulk or liquid products, discharging dry commodities pneumatically, and unloading or loading liquids through use of an optional gear-driven pump. Reportedly, it

handles any dry product that will fall by gravity, and liquids of viscosity up to 18,000 SSU.

With sugar, for example, its pneumatic unloading system offers savings of 17-30c. per bag, plus in-plant-handling savings of 25c. per bag. The 35-ft. unit uses a single positive-displacement blower (2,000 cfm.) mounted in front of trailer to convey up to 30 tons per hr. of bulk sugar over distances exceeding 300 ft.

For ease of cleaning and weight saving, trailer's unlined pressurized tanks are of aluminum, which withstand 12 psi. Unit can be washed between uses for different commodities by running water through tanks and ducts, then using the blower to eject the water and to air-dry. Cleaning takes about 30 min.

Liquid sugar can be unloaded either by gravity or through a delivery line, which may be adapted to serve refinery lines from 2-6 in. dia. Loading of liquid sugar from a freight car can be done by reversing the gear-driven pump. (Truck is gravity loaded at the refinery).

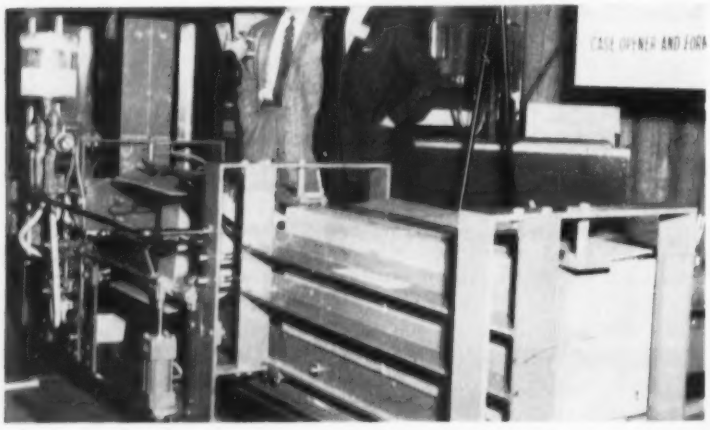
In the pneumatic system, exhaust air from blower is discharged (through sound-damping materials) to a rectangular aluminum duct where sugar is introduced by automatic air-control flow valves. Sugar is conveyed to customer's receiving tank through 6-in. aluminum tubing. Another 6-in. line is installed at the receiving tank to carry airborne fines back to the dust collector, which contains some 450 sq. ft. of cotton sateen bags.

Air is cleaned and sugar fines are collected at bottom of collector. Clean air is returned through the blower. Sugar degradation is termed slight, with fines amounting to only .5% of amount delivered.

Unit also includes an automatic bag shaker for the dust collector. It uses air pressure left in trailer tanks after delivery, pulsating the bags for about 2 min.

Capacity of a trailer is 450 bags of sugar or 4,000 gal. Also available is a 60-ft. double-unit with capacity of 510 bags, 4800 gal. —*Pneumatics, Inc., 2833 4th St., Berkeley, Calif.*

Circle 161C on Reader Service Card



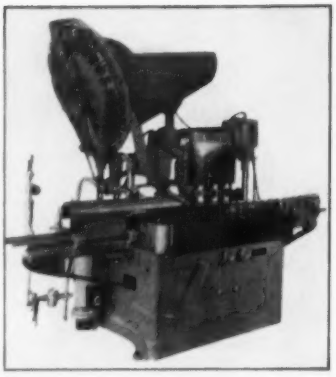
Unit Automatically Opens, Forms, Seals Cases

This pneumatically-driven unit automatically selects a flat case from the magazine (rear), advances the case, opens and forms it, folds in the bottom flaps, then seals the case. Or when equipment is used as a case opener and former alone, the gluing mechanism may be omitted.

Machine (Formnumatic) has a minimum of moving parts, which reduces maintenance. Designed to conserve floor space, unit's all-steel welded frame is 9 ft. long and about 22 in. wide. It is custom-built to case size.

By placing multiple units in parallel, it is possible to meet any production requirement, also to handle cases of various sizes simultaneously. —*Schroeder Machines Corp., New Court Ave., E. Syracuse, N. Y.*

Circle 162A on Reader Service Card



In-Line Capper Provides Uniform Vacuum Levels

Offering special vacuum control, this new in-line jar capper uses only 5-8 lb. of steam pressure to produce uniform vacuum levels.

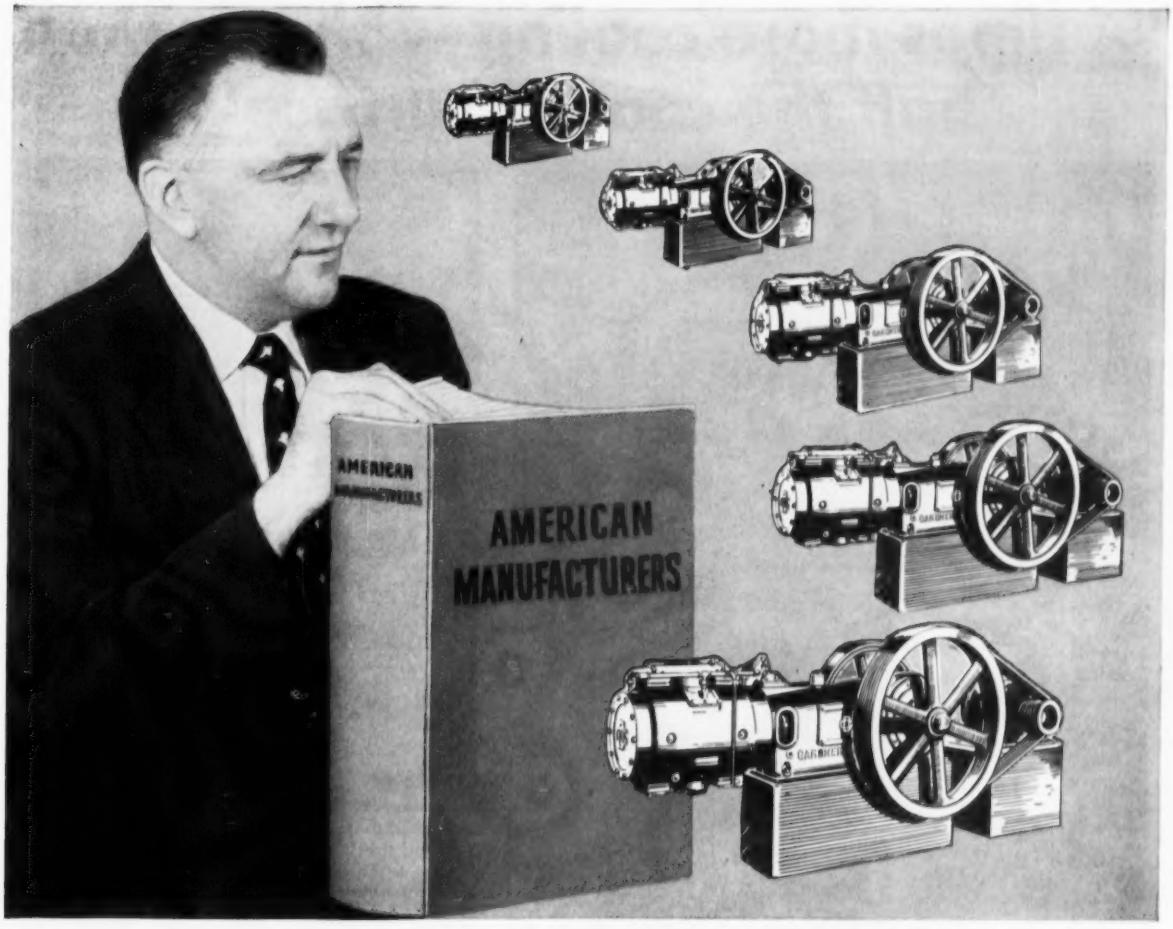
In operation, both cap and glass are first pre-positioned. Then the cap is tilted, jar's head space is flushed with a controlled steam jet, and container is immediately sealed. Vacuum levels are readily controlled either by a needle valve on the jet or by adjusting the pressure.

Machine is equipped with a head-space preheater, a superheater, and an efficient exhaust system. A press-on attachment is optionally available. Changeovers from screw-on caps to press-on types, or for different cap sizes, takes about 10 min.—*Ball Brothers Co., Muncie, Ind.*

Circle 162B on Reader Service Card

Packages Viscous Items As Individual Servings

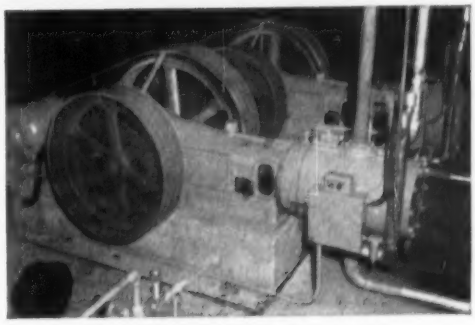
Designed for maximum efficiency and sanitation, this unit packages individual servings of viscous foods at 60 per min. (*turn page*)



Known by the companies that keep it the Gardner-Denver RX compressor

Manufacturers that depend on the RX know it delivers more than air. It delivers years of trouble-free service and economy. Underneath its sturdy main frame are compressor parts engineered to run round-the-clock. Parts easy to inspect and adjust. Designed for smoother operation, better balance and lowest power consumption.

Full details of RX models from 100 to 1410 cfm piston displacement, for pressures from 15 to 150 psi, are described in Gardner-Denver Bulletin HAC-40. Write today.



RX installation being used for instrument air in power and light company.

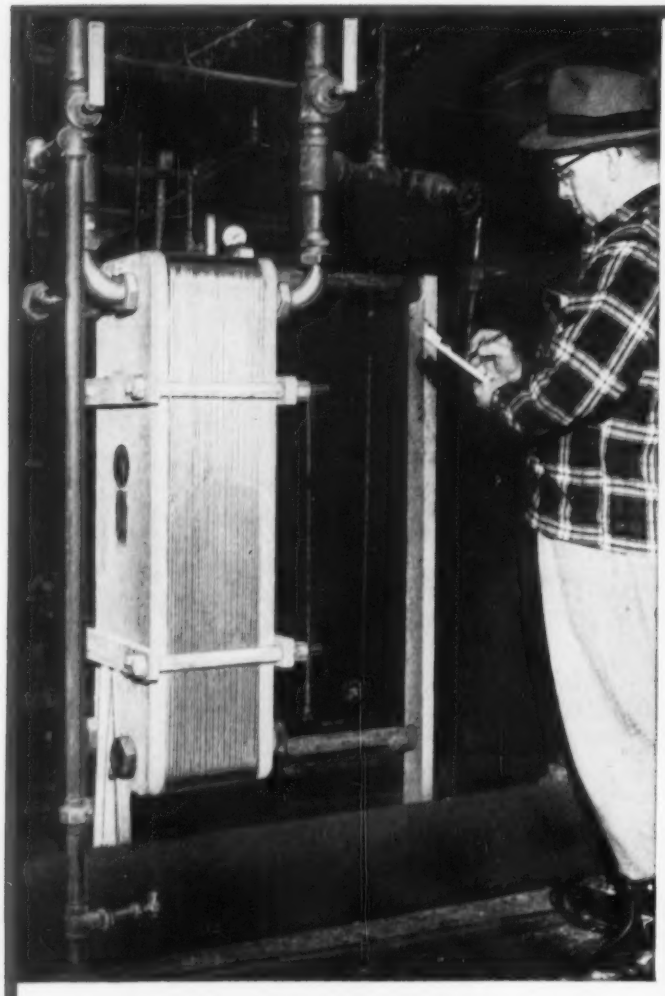
ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

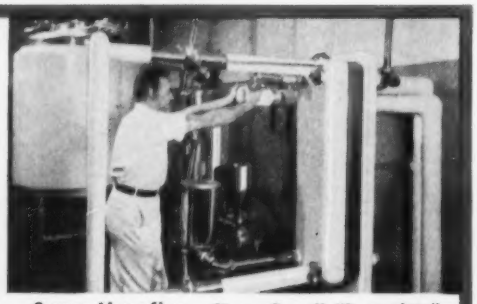
Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more data, circle this page number on card at back →

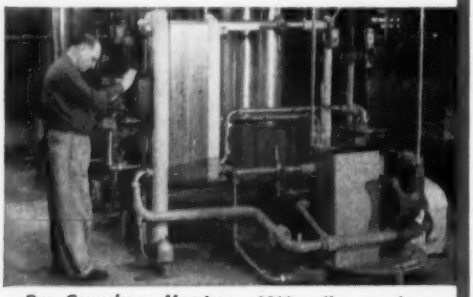
"5 times more cooling with less than half the cooling surface"



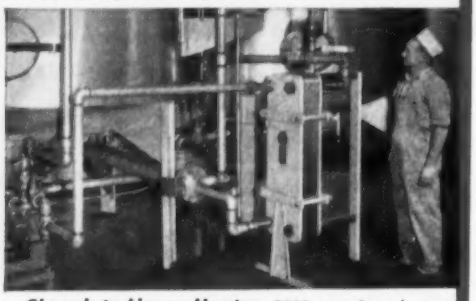
Irish Moss Filtrate Cooler. Mr. Neal F. Fogg checking performance of 30-plate "Superplate" heat exchanger cooling Irish Moss filtrates from 149° down to 90° F.



Sugar Liquefier — Cherry-Burrell "Superplate" 500 gallon-per-hour syrup cooler in a large beverage plant.



Pre-Canning Heater. 1500-gallon-per-hour "Superplate" heat exchanger in a beverage plant, used as a pre-canning heater.



Chocolate Liquor Heater. 5000-pound-per-hour "Superplate" heats chocolate liquors to 250° for cocoa butter extraction process.

"Your 'Superplate' plate-type heat exchanger sure solved our cooling problem," says Neal F. Fogg, Plant Engineer of Algin Corp. of America. "We had two shell and tube heaters, but couldn't get enough temperature drop to cool Irish Moss filtrates to 90°.

"Clogging was a constant problem, too. Not to mention gasket blowouts due to pressure build-up.

"So we switched to 'Superplate' . . . easily get our needed 55° temperature drop . . . which is five times more cooling than we used to get with two coolers. Clogging no longer a problem. And our first year was 100% maintenance free."

Not just a cooler

Versatile "Superplate" heats, cools, regenerates and Shortime pasteurizes almost any liquid. Electropolished 304 or 316 stainless steel plates have from *two to five times more heat exchange surface per pound* of product than tubular exchangers.

"Superplate" saves money, too — through reduction of heating and cooling costs by regeneration . . . through elimination of product evaporation and shrinkage . . . through space savings.

See your Cherry-Burrell Representative. Let him prove what "Superplate" can do for your product. Or write for literature.

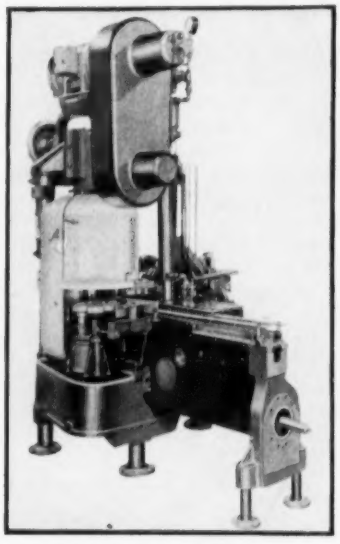
CHERRY-BURRELL
CORPORATION
427 W. Randolph Street, Chicago 6, Ill.

Dairy • Food • Farm • Beverage • Brewing • Chemical • Equipment and Supplies
SALES AND SERVICE IN 58 CITIES—U.S. AND CANADA

Known as Cream and Condiment Packager, it fills and caps maker's ½- and 1-oz. cups. Typical products handled include homogenized cream, French dressing, maple syrup, apple sauce, ketchup, mustard, and dessert sauces. Equipment is leased.

Of stainless steel and dairy metal, machine employs a worm-type cup dispenser, rotary cup-carrying turret, displacement-type rotary metering valve, 2-gal. reservoir, and an automatic take-off for filled cups. It quickly converts from ½ oz. to 1 oz. cup sizes, and all machine parts in contact with or near the product are easily disassembled for fast cleaning. —*Dixie Cup Co., Easton, Pa.*

Circle 162C on Reader Service Card



6-Spindle Unit Closes 600 Cans per Min.

Combining speed and efficiency, this new closing machine handles up to 600 cans per min., depending upon can size and product.

A six-spindle unit (450-HCM), it closes cans ranging 202-404 dia. and 200-708 high, and is suitable for all products except beer and carbonated beverages. The basic machine consists of main drive, can-feed table, filler floor stand, end marking unit, 90-deg. discharge including idler sprocket, and change parts for one can size. Auxiliary equipment is optionally available.—*Continental Can Co., 100 E. 42nd St., N. Y. C.*

Circle 165A on Reader Service Card

New Truck Body Stresses Functional Design

Built for hard start-and-stop service, this new 10-ft. delivery body offers greater driver safety and comfort, advance styling, and easier maintenance. Of high-tensile steel, unit (Better Built) has a 356 cu. ft. payload capacity.

An important safety addition is a driver's seat safety latch, which prevents the seat from being tilted forward until latch is released by operator's foot. This keeps driver from being thrown forward when brakes are suddenly applied, thus enables him to retain full control of the vehicle in such an emergency.

Also provided are a high-capacity hot-water heater, window-width defroster chamber, full-sweep windshield wipers, and an enlarged rear-view mirror. All controls are conveniently mounted on a single panel.

A polished aluminum grid-type grill presents a clean, modern look at the front, and wider aluminum trim streamlines front fenders.

Easily-removable floor panels provide faster access and speedier service of engine and chassis.—*Boyertown Auto Body Works, Boyertown, Pa.*

Circle 165B on Reader Service Card

OTHER DEPARTMENTS Featured in This Issue

Trends & Forecasts	page 7
Hors d'Oeuvres	12
Developments to Watch	17
Creating the Package	18
New Packages & Products	20
Ole Sage Episode	33
Practical Ideas	39
FE Opinion	53
Keeping Up With the Field	125
Men & Companies	137
Advances in Technology	143
Questions & Answers	152
Just Off the Press	176
Useful New Books	191
Recent Inventions	193

Conveyor-Line Unit Gages Food's Moisture Content

Here's an advanced electronic system for continuously measuring and recording moisture in cereals, baked goods, and other products handled by conveyor.

Moisture selectivity ranges 0-30%, and analysis is governed by a single control.

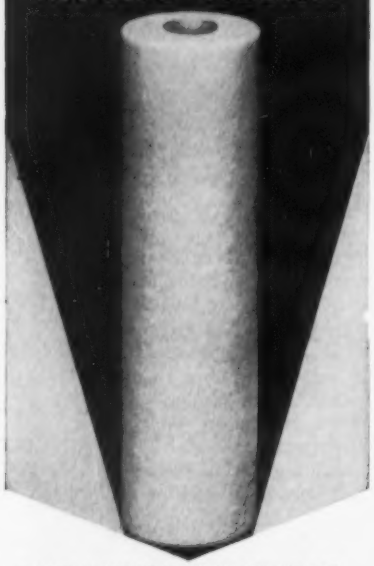
Detector unit (Sentry Custom) is housed in a portable console whose primary circuits are contained in lightweight replaceable drawers. Power is automatically regulated for a.c. and d.c. System is unaffected by wide variations in line frequency or voltage, and through its compact plug-in drawer arrangement may readily be serviced or expanded.—*Laucks Laboratories, Inc., 1201 Poplar Place, Seattle.*

Circle 165C on Reader Service Card

A NEW FILTER CARTRIDGE for the FOOD INDUSTRY

CUNO

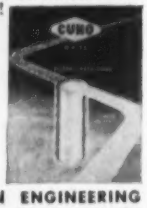
MICRO-KLEAN



- **NEW 5-MICRON WHITE CELLULOSE CARTRIDGE** . . . is ideal for water, liquid food processing and all other applications where *Fine Filtration, Purity, Clarity* and complete absence from any filter-imparted *Taste* are essential.
- **LOWEST CARTRIDGE REPLACEMENT COST** . . . because Cuno's exclusive "Graded Density" feature uses the entire cartridge body for micronic filtration. Cartridge life is *doubled!*
- **A COMPLETE LINE OF STANDARD HOUSINGS** . . . for this new filter cartridge provides flow rates from a few gallons per hour to *hundreds* of gallons per minute!

WRITE NOW FOR COMPLETE INFORMATION

Send for your free copy of Cuno Micro-Klean Catalog No. 53-100.



FOR APPLICATION ENGINEERING SERVICE . . . contact the Cuno Field Engineer conveniently located in your area. This specialist is fully qualified to provide the help you need to solve your filtration problems.

CUNO ENGINEERING CORPORATION

2407 South Vine Street,
Meriden, Connecticut

Filtration Engineers in Principal Cities

New Equipment & Supplies

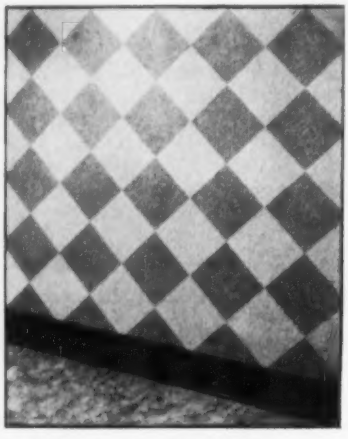
New Unit Guards Against Generator Overheating

Field-temperature measurements, which detect dangerous overheating in electrical generators, may now be conveniently made by a new method. Latter combines a Kelvin double-bridge circuit and an indicating recorder.

These measurements are highly important to safe and economical operation, since shorter insulation life or complete failure of insulation could result from overheating. While unit is used mainly with a.c. generators, it can also be applied to d.c. motors and generators, synchronous motors, converters, and condensers.

System relates conductor resistance changes to temperature of field windings. Measurement instrument (Kelvin Double-Bridge Indicating Recorder) employs a pen with speed of 24 sec. for full-scale response.—*General Electric Co., Schenectady, N. Y.*

Circle 166A on Reader Service Card



Fire-Resistant Plastic Tile Is Easily Applied, Cleaned

Easy maintenance and fire resistance are advantages reported for a new vinyl wall covering. Product is listed by National Board of Fire Underwriters.

Called Vinyl Wall Tile, it is also highly resistant to oils and grease, and not harmed by soaps, detergents, alkalies, and moisture. Scratches may be removed by cleaning and rubbing with wax or a cleansing agent, and this tile will not discolor with age.

Made of plastic and asbestos fibers, material has high dimensional stability, yet is flexible enough to curve around inside and outside corners. This provides savings both in installation time and cleaning.

Product is applied with an adhesive to almost any firm, smooth base, and can be formed to sharp angles by heating with a blow torch. Tile is available in 9-in. squares with textured design in 9 colors.—*Armstrong Cork Co., Lancaster, Pa.*

Circle 166B on Reader Service Card

Pump's Action Prevents Product Contamination

Sanitary design of this metering pump, in the capacity range 0.1-250 c.c. per min., eliminates contamination of fluid being handled.

Unit (Model T-8) operates by moving steel fingers in a wave-like motion over flexible tubing to pump liquids, gases, and slurries. Thus, product never contacts any part of the mechanism.

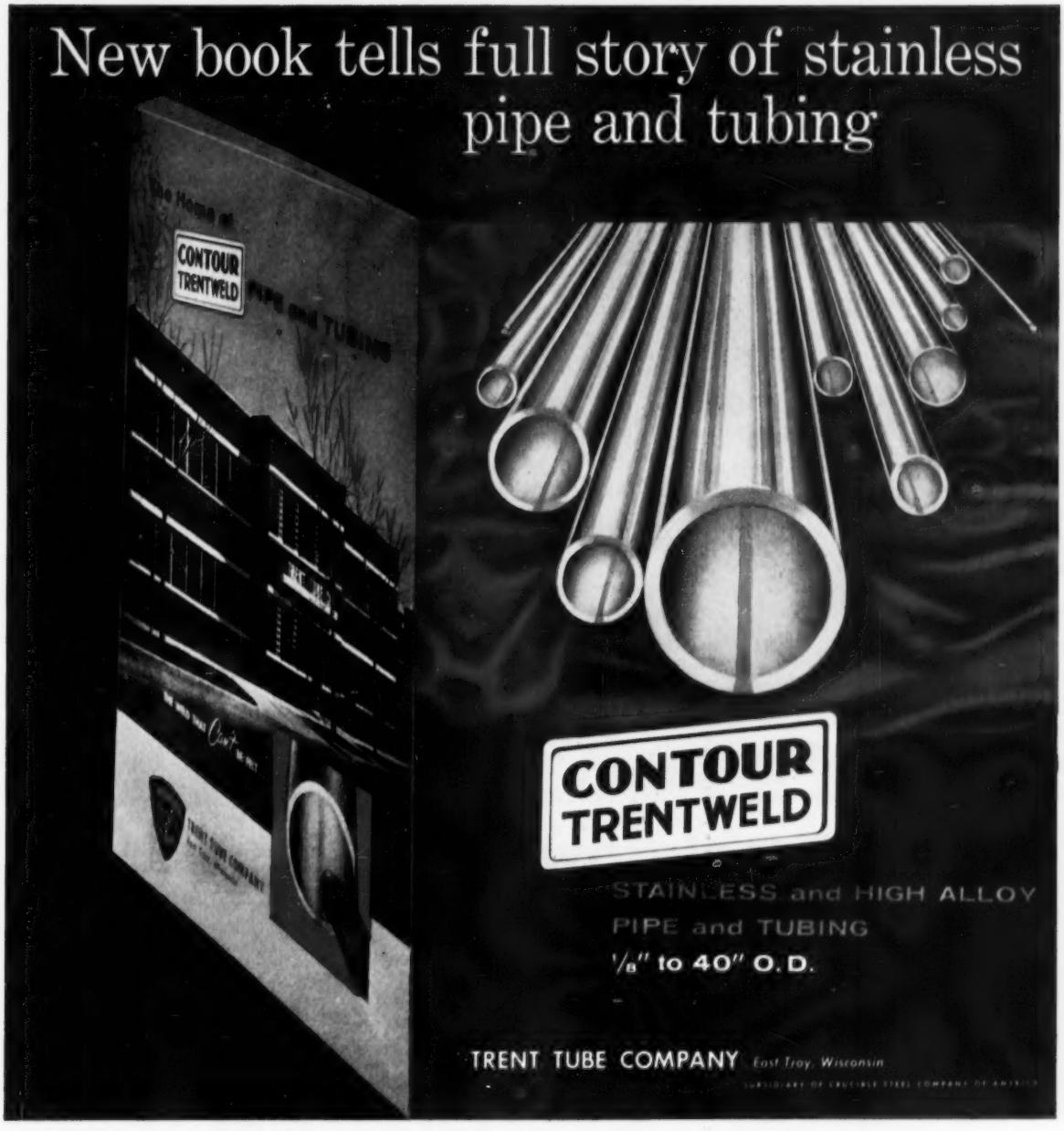
Pump accommodates tubes of $\frac{1}{32}$-$\frac{1}{4}$ in. i.d., which may be of rubber or plastic. Standard model includes a speed changer and $\frac{1}{3}$-hp. open motor with switch, all mounted on an aluminum base.—*Sigmamotor, Inc., 22 N. Main St., Middleport, N. Y.*

Circle 166C on Reader Service Card

Many Advantages Cited For Teflon-Lined Pipe

Because Teflon resists nearly all chemicals and has no toxic effects, this lined pipe will not contaminate foods. Furthermore, it has the added

New book tells full story of stainless pipe and tubing



If you use stainless or high alloy pipe or tubing, this new illustrated handbook was written for you. It's 58 pages big – packed with informative data that you'll refer to again and again.

The table of contents is too long to list here, but it includes, for example, analysis and conversion tables, corrosion characteristics, weights, alloy properties, bending, joining and installation hints.

We can't guarantee how long the supply will last. To be sure of getting your free copy, why not clip and mail the coupon now?

CONTOUR TRENTWELD **TRENT TUBE COMPANY**

A Subsidiary of Crucible Steel Company of America
GENERAL OFFICES: EAST TROY, WISCONSIN
MILLS: EAST TROY, WIS.; FULLERTON, CALIF.

Trent Tube Company
East Troy, Wisconsin

Please send me a copy of your new tubing handbook.

Name_____

Address_____

City_____ Zone____ State_____

A SPECIAL STARCH FROM NATIONAL . . .

resists breakdown during retorting

PURITY NCS is an unusually stable starch thickener—doesn't thin out when canned foods are retorted. Instead, its thickening power increases to surpass that of regular corn starch at retorting temperatures. The result? Upgraded packs made with 10-20% less starch.

PURITY NCS helps safeguard the shelf-life of retorted foods. Reduces weeping or separating. Maintains an appetizing flow even after many months of undisturbed storage.

PURITY NCS is ideal for cream style corn, cream style soups, rarebits, baked beans, stews, gravies, sauces. Why not test it immediately? Write for a sample and data sheet.

National
STARCH PRODUCTS INC.

270 Madison Avenue, New York 16 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

← For more data, circle this page number on card at back

strength factor of the steel casing, thus withstands temperatures to 400F., pressures to 300 psi.

The plastic's low coefficient of friction makes it especially useful where a non-sticky surface is required, as in handling of candy, syrups, and bakery goods. Thus, its use cuts cleaning time, reduces waste of material, and eliminates need for non-stick additives.

Other food uses include handling of salt solutions, tomato juice, dairy and citrus products, and beer.

Pipe and fittings are available in diameters of 1, 1½ and 2 in., and in lengths of 2, 5, and 10 ft.—*Halocarbon Div., Haveg Industries, Inc., 900 Greenbank Rd., Wilmington, Del.*

Circle 166D on Reader Service Card

INGREDIENTS

New Seasoning Boosts Hamburger Quality

A protein-type seasoning that simulates the flavor of steak juices reportedly gives ordinary hamburger the taste and aroma of broiled sirloin.

Product (Hamburger Steak Flavor) is a blend of flavor proteins, vegetable extractives, sugars, and flavorings. Used at the rate of 8 oz. per 100 lb. of product, it is sprinkled over the meat before first grind, or added in the mixer.—*First Spice Mixing Co., 19 Vestry St., New York City.*

Circle 169A on Reader Service Card

CHEMICALS

Corrosion of Steel Curbed By Easily Applied Coating

Large equipment and metal structures may now be field-galvanized at reduced cost by a new corrosion-resistant coating for steel.

With this product (Epo-Lux Primer), it is possible to apply a 90% pure zinc coating by brush, spray, or roller. This percentage of zinc has been found to give maximum electro-chemical cathodic protection.

Primer is further protected by a top coat (No. 100) which guards against alkalis, acids, solvents, and salts that ordinarily attack zinc.—*Steelcote Mfg. Co., 3418 Gratiot St., St. Louis.*

Circle 169B on Reader Service Card

BRIEFS . . .

Automatic Pickle Packer, employing conveyor and rotary drum, fills variety of 8-32 oz. jars at 70-90 per min. Machine requires two operators, one to place empty glass in chucks, the other to remove filled jars. All parts of unit contacting brine are of 316 stainless.—*Food Packers, Inc., Corydon, Ind.* (169C)

Automatic Steak-Maker turns out 40 chopped steaks per min., papered and ready for sale. Unit (Steak-erator) is a grinder attachment with extruding nozzle, and product dimensions are adjustable.—*Steak-erator Co., 520 North Western, Oklahoma City, Okla.* (169D)

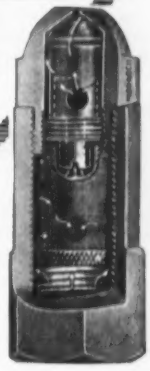
New 1,900-Gal. Refrigerated Body, mounted on '57 Ford tilt cab, may be fully loaded with ice cream or frozen foods, yet still be within limit of 18,000-lb. rear-axle law. Truck has 3 curb-side doors and roof rack with access ladder. Refrigeration is supplied by holdover plates and two 3-hp. condensers. Body is about 17 ft. long, 8 ft. wide, and proportioned to height of cab.—*Herman Body Co., 4400 Clayton Ave., St. Louis.* (169E)

Blister-Packaging Unit automatically fills pre-formed plastic bubble, inserts coated board, heat-seals, and ejects at 150-200 per min. Machine (Blisto-Matic) simultaneously handles six blisters, each containing a differenct product.—*Packaging Industries, Montclair, N. J.* (169F)

New Cradle-Mounted Fans, for product cooling, drying, recirculation, etc., can be rotated full 360 deg., thus may be used on floor, wall, or ceiling. Units are protected against moisture, have explosion-proof motors, and are available in 5 sizes (16-36 in.) with ratings to 18,700 cfm.—*Robbins & Myers, Inc., Springfield, Ohio.* (169G)

Gas Chromatography Unit provides quick and accurate analysis of gases and liquids with boiling points to 350C. Instrument (GC-2) employs

There's a Monarch nozzle for every spray job!



If the liquid can be sprayed with direct-pressure rely on MONARCH advanced design NOZZLES

For a perfect spray, many food processing plants prefer Monarch Nozzles.

Monarch's advanced design reduces clogging and guarantees dependable applications to . . .

★ WAX FRUITS
★ RINSE VEGETABLES
★ POWDER MILK
★ DRY EGGS
★ WASH FILTER CAKE
★ HUMIDIFY BANANA ROOMS

Send for Catalog 1

Monarch
MFG. WORKS, INC.
2517 E. ONTARIO ST.
PHILADELPHIA 34, PA.

HAMILTON

STAINLESS STEEL KETTLES

JUST think! Over three quarters of a century building fine cooking and mixing kettles for industry. These quality units, engineered and designed by the finest craftsmen, insure higher efficiency, labor-saving and cost-saving operation. There's no substitute for the best—"Hamilton." When it comes to mixing, the agitators, the drives are designed for longer life and these rugged sanitary units have proved themselves in operation. The Steam, Jacketed Kettles are fast-cooking, easy-cleaning, precision-built.

If it's the best you want—then you want "Hamilton," the foremost designers and producers of the finest kettles to mix and cook. There's a "Hamilton" to suit your specifications so why settle for anything but the best, a "Hamilton" Stainless Steel Kettle.

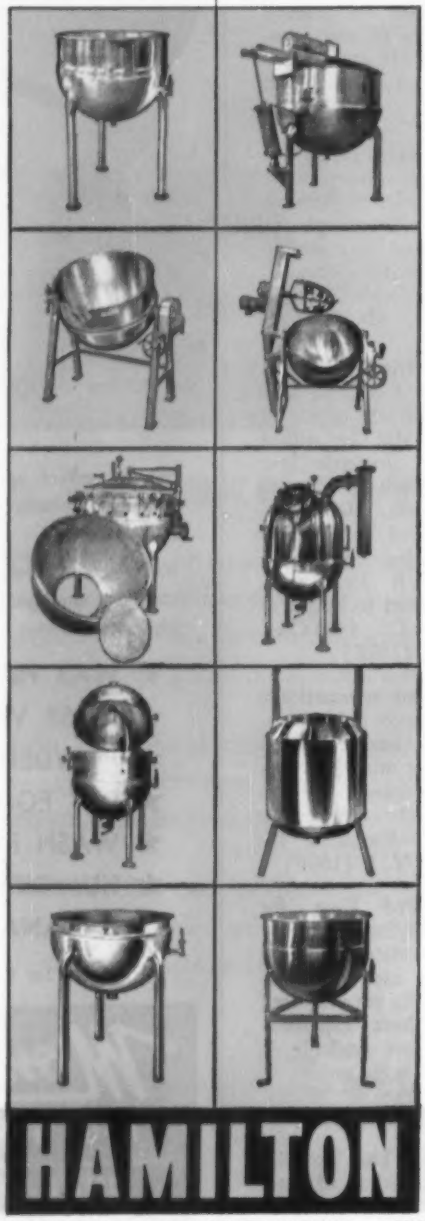
STYLE SA
Streamlined design, balloon jacket. Extra large diameter provides greater heating surface, efficient cooking. Sizes range from 15 to 500 gallon. A.S.M.E. Code constructed for steam working pressures of 40, 90 and 125 pounds.

STYLE CW
Designed to process large batches up to 150 gallons. Positive worm gear and handwheel give complete control of large capacity loads while tilting. Large diameter kettle gives fast, even cooking. Sizes from 30 to 150 gallons.

STYLE PC
Stainless steel pressure cooking kettle, designed especially for meat and poultry processing. Balloon jacket gives increased heating capacity. Built for 90 p.s.i. in jacket and 15 p.s.i. in kettle. Has quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.

STYLE VT
For small batches this unit has no equal. Vacuum cooker with tilting top, easy loading. Sizes from 30 to 150 gallons. Sanitary design throughout. Jacketed for 90 p.s.i. steam working pressure.

STYLE SB
Shallow type kettle with balloon jacket. Streamlined for complete sanitation. A.S.M.E. Code constructed for working pressures of 40, 90, and 125 pounds. Sizes range from 15 to 350 gallons. Larger size kettle can be furnished to meet specifications.



STYLE SA MIX COOKER
Standard SA Mix Cooker has either single motion or double motion agitator with or without hydraulic lift. With hydraulic lift agitator lifts easily and smoothly out of cooker. Sizes range from 30 to 500 gallons.

STYLE CW MIX COOKER
Large diameter gives fast even cooking. Hydraulic Lift tilts agitator smoothly and easily out of tilting kettle. Available for 40, 90, 120 pounds steam working pressure.

STYLE HV
A vacuum cooker for large capacities from 150 to 500 gallons. A hinged manhole is provided for access to the inside. Available with a mixer — circulator can be installed to increase heat transfer and agitation.

CIRCULATOR
Stainless steel steam immersion heating unit can be installed in any kettle regardless of size or shape. Gives extra heating surface at the center of kettle. Creates thermal agitation. Speeds up cooking 45%.

STYLE A
General purpose steam jacketed kettle used in processing food, drugs, and chemicals. Full ⅘ jacketed. Sizes range from 15 to 500 gallons. Also available in Type 316 stainless steel or nickel. Larger sizes to meet specifications.

KETTLE SPECIALISTS

HAMILTON

SINCE 1876

DIVISION OF BRIGHTON CORP.... 820 STATE AVENUE ... CINCINNATI 4, OHIO

Equipment & Supplies

carrier gas and packed column to separate sample's components according to rate of travel.—*Beckman Instruments, Inc., Scientific Instruments Div., 2500 Fullerton Rd., Fullerton, Calif.* (169H)

Wet-Bulb Thermal System employing 316 stainless bulb and insulated psychrometer panel resists corrosion and electrolytic damage. It's designed for smokehouses and other applications where corrosive gases cause leaks.—*Powers Regulator Co., Skokie, Ill.* (170A)

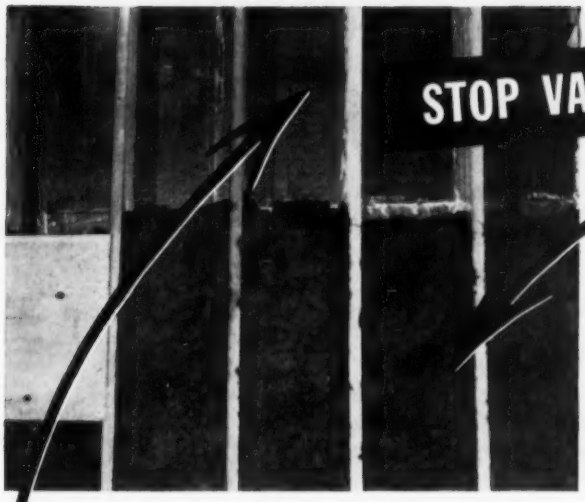
New Wedge-Shaped Cabinets housing instrumentation and automation equipment form flexible semi-circular unit offering operator finger-tip control.—*Elgin Metalformers Corp., 630 Congdon Ave., Elgin, Ill.* (170B)

High-Speed Variety Packager for baked goods (hamburger and hot-dog buns, cinnamon and sweet rolls) eliminates need for cardboard and boxes. Unit (47-H) wraps up to 65 packages per min., may be equipped with labeler, imprinter, and "one-shot" lubrication.—*Battle Creek Packaging Machines, Inc., Battle Creek, Mich.* (170C)

New-Type Plastic Pipe, of high-molecular-weight polyethylene, offers superior structural properties. Rated at 75 and 100 psi., units (SP) have increased resistance to heat, stress-cracking, and corrosion. Sizes: ½-2 in.—*Orangeburg Mfg. Co., Orangeburg, N. Y.* (170D)

Versatile Label Imprinter operates at 120 per min., prints variable data on pressure-sensitive material, heat-seal paper, cloth, gum labels, and string tags. Unit (Wam) handles stock from 1x¼ in. to 4¾x6¼ in., offers automatic pre-set counter, label rewind or cutting, interchangeable inking devices, and two-color imprinting.—*Jackmeyer Label Corp., 855 6th Ave., New York City.* (170E)

Pie-Making Machine having automatic dispenser for fruit, gravy, or meat fillings produces 100 turnover pies per min. Unit also handles 8-, 9-, and 10-in. pies, and 4-in. shells for custard or pecan fillings at 100 per min. Line requires 3-4 operators. —*K. & M. Machine Co., 2271 Young Ave., Memphis, Tenn.* (170F)



STOP VAPOR AND HEAT LEAKS

VOID-FREE PALCO WOOL® INSULATION

reduces heat transmission to a minimum

PALCO WOOL is a natural corkscrew-like redwood bark fiber with the inherent resilience to stay in place without support so entire wall may be inspected to eliminate possibility of voids or pockets. At recommended density of 4.5 lbs./cu. ft., it displaces so much air that convection currents are virtually eliminated. Impervious to moisture effects and deterioration, it has no vapor dams to trap moisture and lower efficiency. Snug fit around all structural members eliminates joints and edge leaks. Application of interior finish is completely independent of insulation placement.

ZERO PERM® VAPOR BARRIER

reduces vapor transmission to a practical zero

ZERO PERM is formed from 1-mil aluminum with ½-mil Du Pont polyester "Mylar" film permanently laminated to each side. This combines the virtually perfect vapor proof quality of aluminum with the tough flexibility of "Mylar"—offering complete permanent protection against vapor leaks. Joints are sealed with ZERO PERM Pressure Sensitive Tape. In effect, this forms a single unbroken vapor barrier sheet enclosing the entire room, which may be inspected before insulation is applied.

*Alumiseal Corporation Trade Mark

Complete open wall inspection

FULL INSPECTION ELIMINATES HUMAN ERRORS IN APPLICATION OF VAPOR SEAL AND INSULATION

1. ZERO PERM Vapor Barrier is completely installed before insulation is applied, allowing full inspection to eliminate vapor leaks.

2. *Palco Wool* is packed behind temporary retainer sheet at bottom of wall.

3. *Palco Wool* is packed behind second temporary retainer sheet.

4. Lower temporary sheet is removed, placed above second sheet, and packing process is continued. Process is repeated until entire wall is packed.

5. As temporary sheets are removed, wall is inspected to determine that there are no pockets, voids, settlement. Interior finish is then applied.

SEND COUPON FOR COMPLETE INFORMATION

THE PACIFIC LUMBER COMPANY

PALCO INSULATION WOOL®

100 BUSH STREET, SAN FRANCISCO 4, CALIFORNIA

THE PACIFIC LUMBER COMPANY 702

100 Bush Street, San Francisco 4, California • Room 2404-A

Please send me, without obligation:

- ☐ **Complete Refrigeration Insulation Manual**
- ☐ **Sample of *Palco Wool* Insulation**
- ☐ **Information on *Zero Perm Mylar*-Armored Foil Vapor Barrier**
- ☐ **In-place test data on insulated structures**

Name_____

Title_____

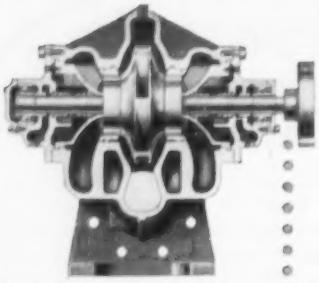
Company_____

Address_____

City_____ Zone_____ State_____

For more data, circle this page number on card at back →

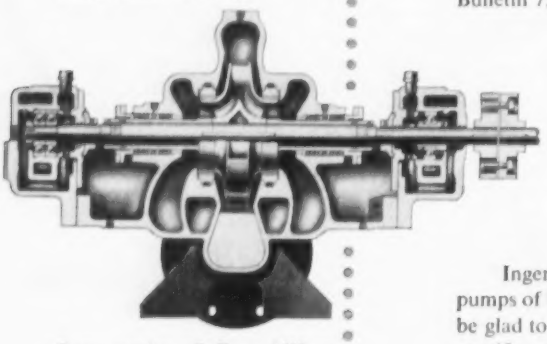
for DEPENDABILITY plus ECONOMY
...IN GENERAL PUMPING SERVICE



Cross section of Maintenance-Free class DMV and DHV pump with double mechanical shaft seals and prelubricated sealed bearings.

I-R Single-Stage, Horizontally-Split Centrifugal Pumps offer many features for trouble-free performance and low operating and maintenance costs

For capacities from 250 to 2400 gpm and heads to 350 ft., the DMV and DHV Pumps shown at the left provide important savings in floor space and virtual immunity to stuffing-box and lubrication problems. All units are equipped with double mechanical shaft seals that eliminate stuffing-box maintenance and pre-lubricated sealed ball bearings that require no attention or lubrication for the life of the pump. For complete details, send for Bulletin 7248-A.

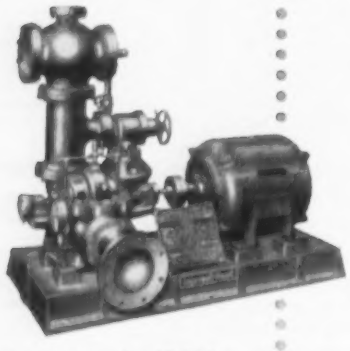


Cross section of Class ALV single-stage pump with conventional stuffing-boxes and shaft bearings.

The standard line of I-R single-stage, horizontally-split pumps, of which the Class ALV unit illustrated is typical, covers the broad operating range from 25 to 50,000 gpm and heads from 20 to 350 ft. Extra-deep stuffing-boxes are equipped with seal cages for the supply of sealing liquid from pump discharge passage or an external source. Two-piece split glands are easy to remove and replace for repacking the box. All of these pumps can be provided with any desired type of drive.

Ingersoll-Rand also offers a complete line of single- and multi-stage pumps of both the horizontal and vertical type. Your I-R representative will be glad to give you complete information on the pumps best suited to your specific requirements.

...IN FIRE PUMP SERVICE



External view of a 5FUV Fire Pump equipped with grease-lubricated ball bearings and fire fittings.

I-R Fire Pumps have been completely approved by the National Board of Fire Underwriters and the Associated Factory Mutual Fire Insurance Companies

Except for details of pump fittings, I-R Horizontal Fire Pumps are identical to the general-purpose units shown above. Fully approved for permanent installations of the hose line or sprinkler type, they provide dependable fire protection for public buildings, small cities, factories, shipyards, hotels and mines.

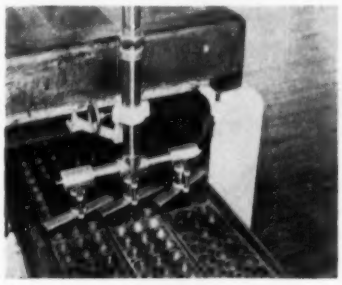
I-R Horizontal Fire Pumps are available, with any desired standard fire fittings, in capacities of 750 and 1000 gpm at 100 and 125 psi, or 1500 and 2000 gpm at 100 psi. Vertical Units are also available for 750 and 1000 gpm at 100, 125 and 150 psi. Send for Bulletin 7226.

Ingersoll-Rand

10-453 ♥ 11 BROADWAY, NEW YORK 4, N. Y.

PUMPS • CONDENSERS • COMPRESSORS • DIESEL ENGINES • AIR AND ELECTRIC TOOLS • VACUUM EQUIPMENT

EQUIPMENT APPLICATIONS



Suction System Provides Precision Pan Greasing

Vacuum equipment has upped efficiency of pan greasing at Continental Baking Co., New York City.

Formerly, excess grease that stuck to tops of pans entailed considerable waste, and by dripping onto floors, racks, and oven shelves, caused expensive extra cleanup.

However, the new grease-suction system (Spencer Turbine Co., 486 New Park Ave., Hartford, Conn.) controls and conserves this grease. Mounted above the pan conveyor, vacuum units remove excess grease from tops of pans as they leave the greasing machine. This material is now recovered and reprocessed for future use.

Circle 173A on Reader Service Card

Truck Deliveries Sped By 2-Way Radio

A mobile 2-way radio system enables faster beer delivery by Adolph Coors Co., Golden, Colo.

The installation (RCA Communications Products Dept., Camden, N. J.), said to be the first in the brewing field, consists of a high-frequency base station and mobile units at a Denver branch warehouse. Latter provides distribution to outlets in Denver and within a 30-mile radius.

In addition, this system will be used for Civil Defense Service, whereby the radio-equipped fleet would evacuate children from local schools in the event of emergencies.

Circle 173B on Reader Service Card

Capacity Up, Weight Down In Efficient 40-ft. Reefers

Latest advances in temperature-controlled transportation are combined in Pacific Intermountain Express's 40-ft. reefers. Moreover, they offer ⅛ greater cubic capacity, yet weigh 5% less than present 35-ft. models in operation.

Equipped with stainless meat rails, trailers (Hi-Cubes, Strick Co., Whitaker Ave. at Godfrey, Philadelphia) have highly efficient refrigeration systems (ThermoKing) that maintain temperature settings dependably. A 7-day chart records this temperature during transit.

Styrofoam insulation employed on floor and wall base protects cargo from highway heat radiation, and is moisture-proof. Fiberglass is used for insulating both the sides and tops of the trailers.

Also included is a new type of air-ride suspension that provides constant frame height as weight increases, thus eliminating the need to allow for maximum height when reefer is unloaded.

Circle 173C on Reader Service Card

More profit from the same product?

Certainly!

When you can accomplish an extremely accurate removal of contaminations (both magnetic and non-magnetic), upgrade quality, increase purity, decrease wear and tear on equipment, and minimize hand-picking costs, *all with one type of equipment,* you'll find more profit from the same product.

Month after month, an increasing number of food processors are using the SS&S technique — *dry separation by fluidization.* We'd like to tell you more about Sutton Gravity Separators and Stoners, and their wide variety of applications. May we?

FOR ADDITIONAL INFORMATION ON VARIOUS MODELS AND OPERATING DATA, WRITE DEPT. FE, SUTTON, STEELE & STEELE, INC., 1031 SOUTH HASKELL, DALLAS, TEXAS

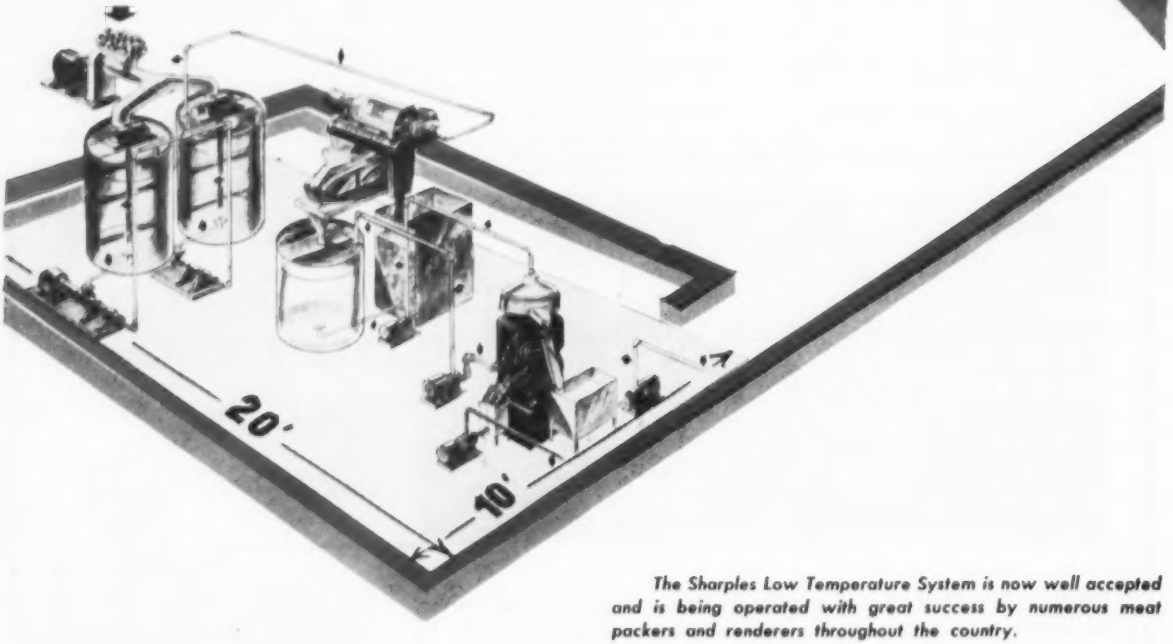
SUTTON, STEELE & STEELE, INC.

SEPARATIONS

it's a fact . . .

In an area 10′ x 20′, the Sharples Low Temperature Rendering Process renders up to 8000 lbs. of raw fat/hr., and produces a finished fat product that is free of protein, with less than 0.2% moisture content. The clarified fat has the same characteristics as the raw fat: low fatty acid content, extreme lightness of color, high stability, and blandness of odor and taste. There is no degradation by heat.

Users of the Sharples Low Temperature Rendering Process* are satisfactorily handling all types of fats; several are even efficiently handling warm killing fat, without chilling.



*Patent applied for.

The Sharples Low Temperature System is now well accepted and is being operated with great success by numerous meat packers and renderers throughout the country.

The Process is complete and continuous, and requires little or no operating labor.

SHARPLES

THE SHARPLES CORPORATION
2300 WESTMORELAND STREET • PHILADELPHIA 40, PENNSYLVANIA
NEW YORK • PITTSBURGH • CLEVELAND • DETROIT • CHICAGO • NEW ORLEANS
SEATTLE • LOS ANGELES • SAN FRANCISCO • HOUSTON • ST. LOUIS • ATLANTA
Associated Companies and Representatives Throughout the World

Using Salt Efficiently

by **INTERNATIONAL SALT COMPANY, INC.**—America's largest producer of salt

"Volumetric Dilution" Assures Highest Accuracy in Brine Make-Up

For years, the process of making dilute brine has required careful manipulation, frequent salometer readings, and close supervision. Today, however, dilute brines of any strength whatever can be made up quickly and accurately, by means of a system which gives consistently dependable results. This system, which uses International's Lixate Equivalent formula, is known as "Volumetric Dilution." It needs no trained technicians, a minimum of attention, and no salometer readings.

How "Volumetric Dilution" works. Since a dilute process brine can be considered a mixture of fully saturated brine and pure water, it is necessary in each case to know the ratio between these two components. This ratio can be quickly determined by means of International's Lixate Equivalent—which is essentially the amount of fully saturated brine needed to bring water to a brine of correct salometer reading.

The first step, after determining how much finished brine is needed, is to indicate this amount on the tank wall with a simple marker (cleat, nail, paint, etc.). Then, with International's Lixate Equivalent formula, the exact amount of 100%-saturated brine needed for the finished brine mixture is quickly computed. A second marker is then placed to indicate this lower level, and the tank is ready for the brine-dilution operation. Fully saturated brine is poured up to this lower tank marker, and water is added until the liquid level reaches the top marker.

For example: a tank is to hold a 10-ft. depth of 60° S. brine. To find exactly how much fully saturated brine should first be poured into the empty tank, the desired finished brine depth (10 ft.) is multiplied by the Lixate Equivalent (which, for 60° S. brine, is 0.5570). Answer: 5.57. In other words, fully saturated brine must be poured to a level 5.57 ft. above the tank bottom. When water is added to the 10-ft. level, the result is a supply of 60° S. brine.

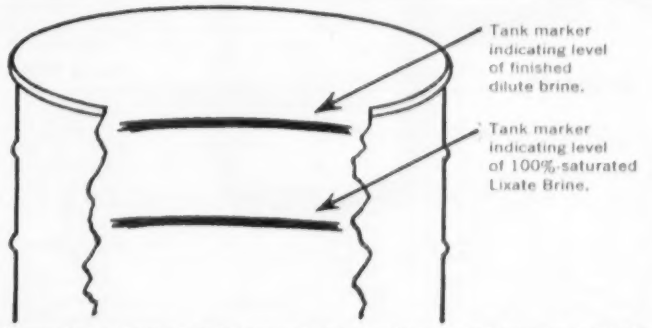
International's Lixate Equivalent formula works equally well when brine volume is measured in gallons. If a tank is to hold 500 gallons of finished brine, the amount of fully saturated brine needed is 278.5 gallons (500 x 0.5570). This amount of fully saturated brine when mixed with water, will make 500 gallons of 60° S. brine.

This system of "Volumetric Dilution" can be put into operation quite simply: 1. There must be a supply of 100%-saturated brine (which is made automatically in the Sterling Lixator). 2. The brine make-up tank, whatever its cross-sectional shape, must have vertical walls, so that the horizontal area remains constant. 3. Liquid level marks are needed on the tank walls.

Two of these requirements are part of every Lixate Brine-Making Installation. A supply of fully saturated brine is always on hand in the Lixator, and dilute brine can be made up in any existing brine storage tank. Thus the only necessary additions are the brine-depth markers on the tank wall.

"Volumetric Dilution," which gives such positive accuracy for such little time and effort spent, will work *only when the brine used is 100%-saturated.* If the brine is, for example, 95%-saturated, the Lixate Equivalent formula won't apply, and the finished brine won't have the desired strength.

There is a Lixate Equivalent for every salometer reading of dilute brine—from 1° S. (Equivalent 0.0083) to 99.6° S. (Equivalent 0.9945). To get Lixate Equivalent data, simply contact International. No cost or obligation.



Cutaway view of tank ready for accurate brine make-up with "Volumetric Dilution"

The most effective brine for accurate "Volumetric Dilution" is Lixate Brine—always fully saturated, always crystal-clear. This brine is made automatically, and self-filtered automatically, in the Sterling Lixator. The Lixator, which needs no attention, also stores both salt and brine. It is widely used today in plants of every type. There are many different kinds of Lixator installations—Storage Lixators, Silo Lixators, Sterling Model Lixators—in different designs and sizes to suit any plant layout.

TECHNICAL SERVICE WITH YOUR SALT

Through skilled and experienced "Salt Specialists," International can help you get greater efficiency and economy from the salt you use. International produces both Sterling Evaporated and Sterling Rock Salt in all types and sizes. And we also make automatic dissolvers in metal or plastic for both kinds of salt. So we can recommend the type and size of salt most perfectly suited to your needs.

If you'd like the assistance of an International "Salt Specialist" on any problem concerning salt or brine—or further information on "Volumetric Dilution"—just contact your nearest International sales office.

International Salt Co., Scranton, Pa.

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa; and Richmond, Va.

FOR INDUSTRY, FARM, AND THE HOME—
STERLING SALT
PRODUCT OF INTERNATIONAL SALT CO., INC.

THEY'RE *BETTER* MADE WITH *Clinton*® PRODUCTS FROM CORN

All these food items are enhanced with Clinton products from corn, which include Corn Starch, Corn Syrup and Dextrose, Refined Corn Oil and Lactic Acid. With over 50 years in the corn processing industry, Clinton has both the products and the technical know-how to add more sales appeal to your food items, put more profits in your sales. Call in a Clinton man today!

50th ANNIVERSARY 1907-1957

Quality products

FROM THE WORLD'S CORN CENTER

CLINTON

CLINTON CORN PROCESSING COMPANY
CLINTON, IOWA

JUST OFF THE PRESS

NEW CATALOGS AND BULLETINS

— Free For The Asking —

PLANT ENGINEERING

Lighting Equipment Book

Hard-cover catalog has sections devoted to lighting data and various classes of industrial lighting. Included are fluorescent, mercury-vapor, incandescent, flood lighting, fittings and lamp holders, and audible signals. Each section has wealth of information. Catalog 28, 208p.—*Benjamin Electric Mfg. Co., Des Plaines, Ill (176A)*

Plastic Reference File

Boils down properties, applications, and fabrication of major groups of plastics. Photographs and sketches illustrate proper uses. Bulletin J-7-10, 16p.—*Bakelite Co., New York City. (176B)*

Metal Floor Plates

Describes installation and application of metal plates designed to protect floors from abuse. 4p.—*Hercules Flooring Co., New York City. (176C)*

Special Steel Catalog

Lists 16 categories of special-purpose steel available in 16,000 grades and sizes. Over 20 estimating, conversion, and weight tables as well as other useful information to steel users are included. ADV 155, 232p.—*Crucible Steel Co. of America, Pittsburgh. (176D)*

Packaged Compressor

Full color catalog covers packaged unit including motorcompressor, cushioned rubber mounting on vertical tank, pipe and fittings, and automatic start and stop control. Safety and space-saving features are reported. Form 1547, 8p.—*Ingersoll-Rand, New York City. (176E)*

Control Pilot

Describes spring-loaded, diaphragm actuated hydraulic pilot valve designed to provide accurate control of diaphragm valves. Unit responds to variations of as little as 1 psi. in the flow line. 2p—*Atlas Valve Co., Newark, N. J. (176F)*

Flexible Valves

Colorful catalog details line of flexible, pinch-type, hose-bodied valves. Has data section including pressure tables, capacities, installation and maintenance instructions, diagrams, and corrosion guides. Catalog FL-1116, 50p.—*Farris Flexible Valve Corp., Palisades Park, N. J. (176G)*

Big Installation Units

Pictures and describes line of heavy-duty units including conveyors, feeders, crushers, and coolers. Booklet 888, 48p.—*Jeffrey Mfg. Co., Columbus, Ohio (176H)*

Roll-Type Air Filter

Treats of a glass fiber filtering media that is rolled on a spool and automatically fed across air streams. Dimension drawings, charts, and accessories are shown. Bulletin 780, 4p.—*American Air Filter Co., Louisville, Ky. (176I)*

Chemically Inert Pipe

Lists specifications for resin and glass fiber chemical resistant pipe. Shows how pipe can be incorporated into existing systems. Bulletin FTL-2, 4p.—*Resistoflex Corp., Roseland, N. J. (176J)*

Seamless Steel Pipe

Data folder has tables listing dimensions and various specifications for seamless carbon, alloy, and stainless steel pipe used for high temperature, high pressure, and other services. TDC-138, 4p.—*Babcock & Wilcox Co., Beaver Falls, Pa. (176K)*

Free Literature—Fast Way

Any of these very-latest catalogs, bulletins, or folders will be sped to you gratis. Just note here the specific literature you want, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service postcard — back of book. Then sign at the bottom and mail.

For your convenience, too, all items in this department are listed and keyed in the Reader Service Section.

Strong Chemical Faucet

Describes stainless steel faucet for safe dispensing of flammable and corrosive fluids. Unit is equipped with double fluorocarbon seals to overcome leakage and seizure problems, and an anti-flash screen to prevent flame propagation. 2p.—*Economy Faucet Co., Newark, N. J. (176L)*

Special Ventilator Unit

Describes heat and smoke relief ventilator intended for situations where unit must operate above the roof line. Form 701,

HIGHLY INTIMATE BLENDS IN 3 TO 5 MINUTES

Sturtevant blending continues during discharge - no segregation or flotation

Sturtevant Rotary Blenders start 4-way blending while charging, continue it during discharge, thus producing highly intimate, even blends of dry and semi-dry materials — within 3 to 5 minutes of start of charging.

Six *complete* blending cycles per hour are common. And Sturtevant's special action produces no particle reduction, cleavage or attritional heat — is highly effective yet gentle and safe even with explosives.

10 cu. ft. Sturtevant Blender at U.S. Steel Corp.'s new Applied Research Laboratory (Raw Materials Division) in Monroeville, Pa. This unit handles batches up to 500 lbs. — is ideal for pilot work and small runs.

One of four 450 cu. ft. Sturtevant Blenders at Celriver Plant of Celanese Corp. (Rock Hill, N.C.). These large units handle up to 20,000 lbs. batches — have a 9-year record of meeting the most exacting blending requirements.

Receiving

Scoops cascade material as drum rotates. Movement forces material from both ends to middle. Thus blending is 4-way — circular, vertical and two lateral.

Discharging

Single gate controls charge, discharge. Blending continues throughout discharge phase. Result is no segregation or flotation — highly intimate, even blends.

Self-cleaning, dust-sealed drum; fast, one-man accessibility

Operation of Sturtevant Blenders is self-cleaning. Drum interiors are completely dust-sealed; special design of stuffing box fully seals against leakage. For inspection of all models, one man simply loosens a few lugs to remove manhole cover — quickly and easily.

Fully or semi-automatic, or manually controlled operation

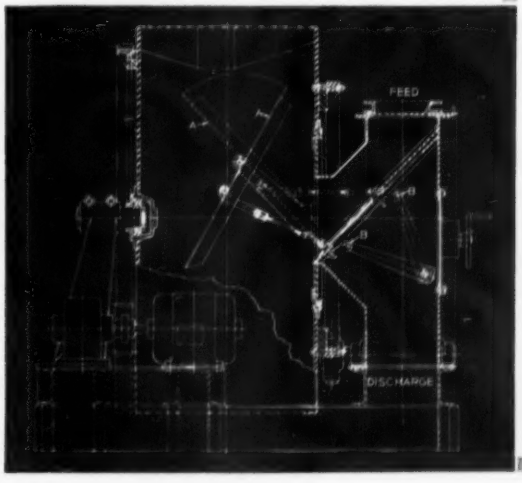
Constructed of carbon steel, stainless steel or Monel metal, Sturtevant Rotary Blenders are engineered to fit each customer's needs — can be supplied with injector sprays and any desired control system.

For more on Sturtevant Blenders, request Bulletin No. 080B. (See coupon for available bulletins on other Sturtevant machinery.) Write today.

STURTEVANT MILL CO.

Nine standard models with capacities to 900 cu. ft.

Pilot plant blending to largest production runs are handled by standard models of Sturtevant Blenders with capacities from 10 cu. ft. to 900 cu. ft. Rotary drum design is a proven spacesaver, including headroom. Write for Bulletin No. 080B giving complete specifications.



Sectional view of Sturtevant Blender

'A' (solid line) shows swinging chute in blending position; 'B' (solid line) shows gate closed for blending. 'A' (dotted line) shows swinging chute in discharging position; 'B' (dotted line) shows gate open for discharging.

My dry-process materials are:_____

Desired capacity is:_____

Name_____ Title_____

Firm_____

Street_____

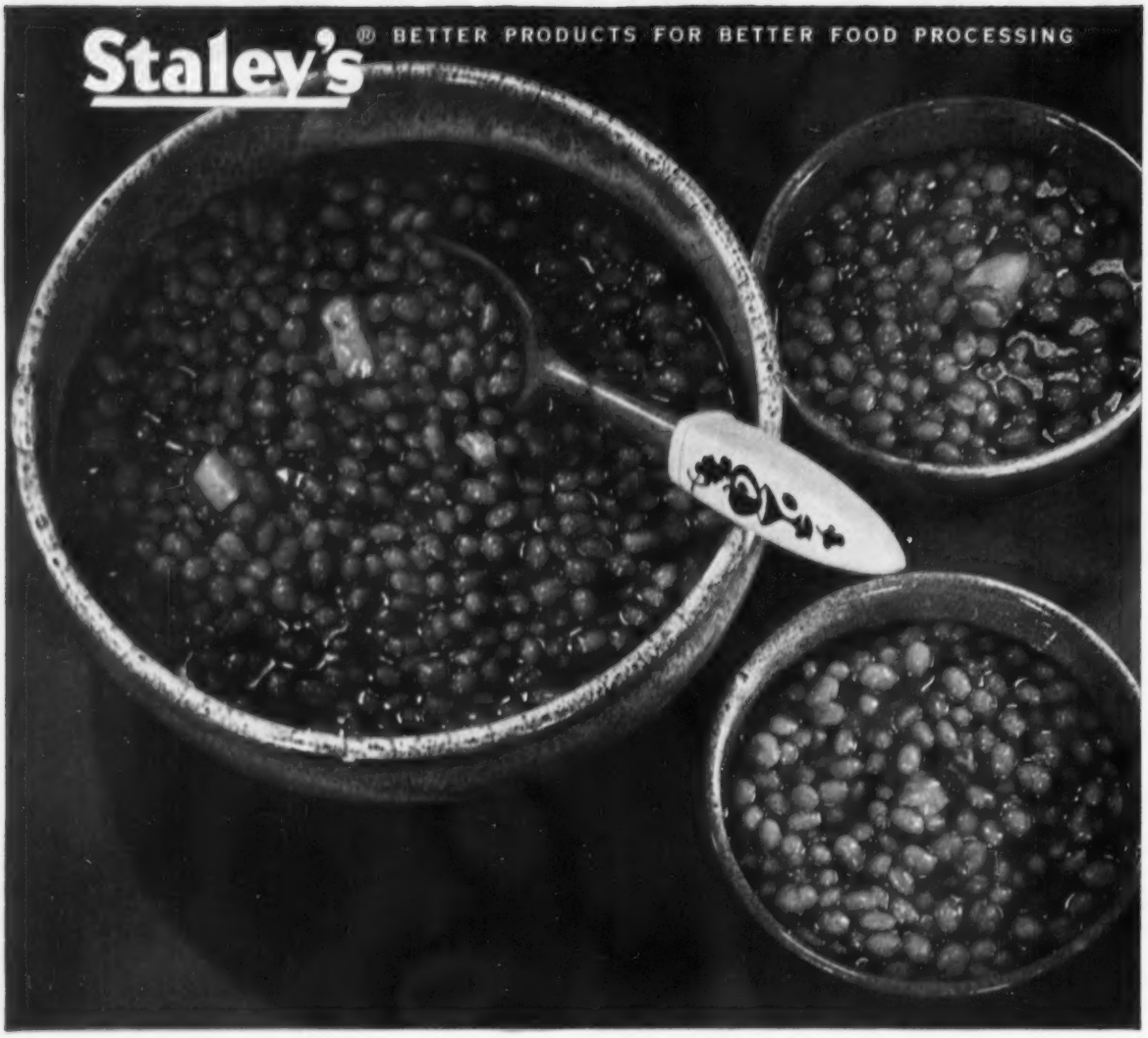
City_____ Zone_____ State_____

STURTEVANT MILL COMPANY, 106 Clayton Street, Boston 22, Mass.

Please send me your bulletin on Blenders ☐
Also bulletins on machines for:

☐ CRUSHING ☐ GRINDING ☐ PULVERIZING
☐ MICRON-GRINDING ☐ AIR SEPARATING ☐ MIXING
☐ SCREENING ☐ GRANULATING ☐ CONVEYING

For more data, circle this page number on card at back →



Modern low cost way insures precise control of browning and sweetness in your pork and beans

Sweetose Syrup delivers more appetizing color, balanced sweetness, zestier flavor. Cuts sweetener handling costs by 96.2%!

What sells beans? Color? Flavor? Price? You know it's all three. But are you fully aware of how completely Sweetose Syrup can fulfill these objectives and more?

Enzyme-converted Sweetose will help you control browning—give your beans an appetizing oven brown color that builds customer loyalty. Sweetose offers a balanced sweetness that never varies. You'll notice a succulent old fashioned zing in the first batch you process with this "Cream of Corn Sweeteners."

As for price, Sweetose effects economies while building the quality of your name. From 25% to 50% of your sweetener can consist of Sweetose. And some of America's largest food processors have proved Staley's 3-step system of handling corn syrup saves up to 96.2% in handling costs.

Look into the advantages of Sweetose today. Call your Staley man collect at the branch nearest you—or write to Staley's, Decatur for more information.

A. E. Staley Mfg. Co., Decatur, Illinois
Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City
New York • Philadelphia • San Francisco • St. Louis

Sweetose®
CORN SYRUP

2p.—*Swartwout Co., Cleveland. (176M)*

V-Belt Engineering Data

Comprises data tables, drawings, and instructions for selection and design of poly-V drives. V-belt drive data is also included. Data Book 10, 112p.—*Raybestos-Manhattan, Inc., Passaic, N. J. (179A)*

Vapor Purifier Units

Itemizes principal applications of purifiers that prevent carry-over from process vessels, remove compressor oil and condensate from steam, air, and gasses, separate solids and liquids from natural gas. Also has photos, drawings, and data tables. Bulletin 801, 8p.—*V. D. Anderson Co., Cleveland. (179B)*

Diaphragm Valves

Describes features of units including plastic valves and diaphragms for corrosive service. Has quick reference chart for diaphragm material selection and dimensional specifications for several valve models. Catalog 104, 12p.—*Hills-McCanna Co., Chicago. (179H)*

Seamless Titanium Pipe

Has technical data on seamless titanium pipe and tubing for use in severe corrosive environments. Details size range and tolerances as well as mechanical, physical, and working properties of the metal. TDC-185, 12p.—*Babcock & Wilcox Co., Beaver Falls, Pa. (179D)*

Brazing Rings

Illustrates use of brazing rings for stainless and high alloy steel tube assembly work. Data Sheet 19, 1p.—*Wall Colmonoy Corp., Detroit (179E)*

Prefab-Steel Buildings

Announces line of truss-type buildings with panel side walls and ends. Available in regular increments up to 100 ft. in width, 20 ft. in height, and unlimited length. Bulletin 56-101, 8p.—*Black, Sivalls, & Bryson, Inc., Kansas City, Mo. (179F)*

Centrifugal Collectors

Gives specifications for 41 sizes of centrifugal collectors. Information on unit selection through determination of particle size is presented. 4p.—*Kirk & Blum Mfg. Co., Cincinnati (179G)*

Refuse Burners

Describes action and construction of conical refuse incinerator available in sizes from 16 to 61 ft. base diameter. Bulletin M-1, 2p.—*Rees Blow Pipe Mfg. Co., Berkeley, Calif. (179C)*

MAINTENANCE

Floor Maintenance Guide

Colorful brochure lists specific product recommendations for each cleaning step on several types of floors. File 25-B-15, 4p—*U. S. Sanitary Specialties Corp., Chicago. (179I)*

Pump Maintenance Record

Offers supply of pump maintenance record cards that provide for complete information on installation, application, and maintenance. A card will be supplied for each pump you have. 2p.—*Goulds Pumps, Inc., Seneca Falls, N. Y. (179J)*

Masonry Stop-Leak

Explains how to stop leaks and water-seepage in above or below ground masonry. MT250, 6p.—*Stonhard Co., Inc., Philadelphia. (179K)*

Stainless Shop Guide

Slide rule chart is handy indicator for proper machining and working practices on various types of stainless steel. Included are figures on turning, drilling, tapping, threading, milling, and reaming.—*Carpenter Steel Co., Reading, Pa. (179L)*

Paint for Damp Surfaces

Shows selection of colors of enamel paint that can be applied to damp surfaces. Coating is described as chemical and fungus resistant and without odor. 2p.—*Wilbur & Williams Co., Boston, (179M)*

PACKAGING

End Label Samples

Attractive compartmented folder contains samples of end labels for bread loaves with themes of industry-wide promotion, recipes, pictorial ideas, community service, punch lines, seasonal, and others. 6p.—*Pollock Paper Corp., New York City. (179N)*

Box Closing Guide

Illustrated booklet discusses fiberboard box closure methods such as hand and machine gluing, taping, stapling, and wire-stitching. Special section has regulation for sealing fiberboard containers and contains basic ways of sealing regular slotted containers as quoted

One Labeler for—

ALL 'ROUND CONTAINER LABELING

of GLASS, TIN OR FIBRE with SPOT, FACE OR WRAP AROUND LABELS

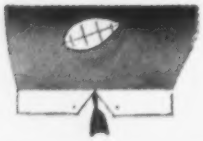
Features
No change over parts
Simple operation
Easy adjustment
Fast cleaning

SPECIFICATIONS
Container Size 1½ oz. to 1 Gallon, Label-Spot, Face, or Wrap.
Floor Space 30x15", Motor ½ H.P. 115/220V.

Be Wise before you Buy—
REQUEST A PLANT DEMONSTRATION

LABELETTE COMPANY
2611 W. LELAND AVE., CHICAGO 25
COrnelia 7-3442

For more data, circle this page number on card at back →



The tale of an embarrassed Manufacturer

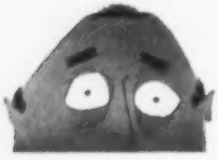
He shaved a tenth of a cent from his production cost. He did it by using an inferior flavor. He couldn't quite understand why his sales were so low...his profit so small ...his embarrassment so financial.

The moral is plain to see. Quality builds consumer acceptance...greater sales... more profit. Realize this goal with **P & S flavors**. Write for free samples.

POLAK & SCHWARZ, INC.

667 WASHINGTON ST., NEW YORK 14, N.Y.

Offices: Chicago, Ill.; Los Angeles, Calif.; Toronto, Can.; Plants: Teterboro & Guttenberg, N.J.; Culver City, Calif.; New York, N.Y.



to help make
YOUR brand
the one
they like best
check up on
SPRAY NOZZLES
To improve product quality and lower spraying costs, Spraying Systems offers the advantages of advanced design and better performance. Typical applications include mixing, washing, cooling and spray drying. We also offer spray nozzles to meet unusual conditions such as high abrasion or extremely fine atomization.
SPRAYING SYSTEMS CO.
3212 Randolph St. • Bellwood, Ill.
WRITE FOR CATALOG 24 forty-eight pages of complete data on thousands of types and capacities.
ADVANCED SPRAY NOZZLE DESIGN FOR NEW DIMENSIONS IN CONTROL AND PERFORMANCE

from uniform trade classification. 20p.—*Acme Steel Co., Chicago. (179O)*

Flexible Tube Facts

Gives details on materials, applications, sizes, nozzles, capacities, caps decoration, and filling of collapsible tubes. 24p.—*Flexible Metal Co., Ltd., London, England. (180A)*

Poultry Packaging Ideas

Shows examples of various aluminum poultry packaging containers. Form 204, 4p.—*Ekco-Alcoa Containers, Inc., Wheeling, Ill. (180B)*

Packages as Salesmen

Discusses how, with the increasing trend to self-service merchandising, packages have replaced salesmen. Various interrelationships between package and consumer are treated. 20p.—*Paraffined Carton Research Council, Chicago. (180C)*

Waxed Paper Storage Tips

Outlines suggestions for proper storage and use of waxed paper. Also has handy card that indicates humidity by color changes. 3p.—*Pollock Paper Corp., New York City. (180D)*

Produce Weigh-Bagger

Describes portable unit for weighing and bagging produce. Form 3306, 1p.—*Exact Weight Scale Co., Columbus, Ohio. (180E)*

Alathon Packaging Uses

Briefs the properties of Alathon plastic and illustrates some of its packaging applications. Included are film, flexible coatings, containers, and closures. Bulletin A-4238, 8p.—*E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. (180F)*

Flexographic Printing Unit

Gives details of single-color flexographic printing unit designed for attachment to any paper, film, or foil winding machine. Many applications are shown. Bulletin RIN-6, 4p.—*Adolph Gottscho Inc., Hillside, N. J. (180G)*

Liquid Wrap Pouch

Informs on applications of Cellothene as an individual serving and disposable liquid wrap pouch. Properties of the film, and automated packaging are also considered. Bulletin M3, 2p.—*Cheslam Corp., Yonkers, N. Y. (180H)*

Special Bakery Tray

Describes trays for bakery products stated to eliminate adjustments, bruises, and crushing. Rigid units have double bottoms and triple ends. 4p.—*Standard Folding Trays Corp., Jackson Heights, N. Y. (180I)*

Automatic Filling Unit

Illustrates various models, components and applications of a filling machine reported to measure product, form and fill packages, seal, sever, and deliver. 8p.—*Hayssen Manufacturing Co., Sheboygan, Wis. (180J)*

Liquid Packeter

Explains operation of a machine for multiple forming and filling of film packets with liquids. Unit is described as sanitary and easily adaptable to changeover. 8p.—*Brown Bag-Filling Machine Co., Fitchburg, Mass. (180K)*

INSTRUMENTS

In-Line Bottle Spotter

Describes unit designed to mount on exhaust end of Gisholt Sealamatic banding machines so that all labels will face outward. 2p.—*Gisholt Machine Co., Madison, Wis. (180L)*

Interval Timers

Furnishes data on a line of industrial interval timers for applications requiring automatic time control. Has typical applications and connection diagrams. Bulletin GEC-1223B, 12p.—*General Electric, Schenectady, N. Y. (180M)*

Thermocouple Wire Jacket

Announces offering of thermocouple extension wire with polyvinyl insulation on each conductor and over-all polyvinyl plastic jacket. Form No. 1200-2, 1p.—*Claud S. Gordon Co., Chicago. (180N)*

NMR Analyzer

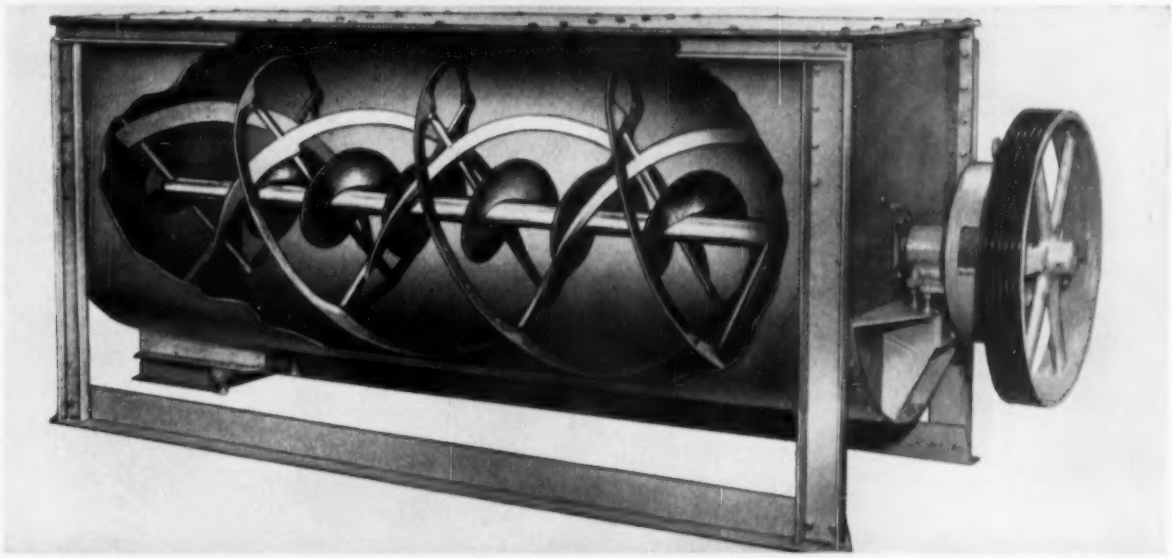
Treats of nuclear magnetic resonance analyzer designed for quantitative measurement of hydrogenous liquids in solid materials. Discussion of principles, block diagram, and results of typical analyses are shown. Tech-Talk No. 1, 6p.—*Schlumberger Well Surveying Corp., Ridgefield, Conn. (180O)*

Heavy Duty Relays

Diagrams, dimensional drawings and photographs of heavy duty relays with interchangeable parts. Unique plug-in receptacle and latching attachment make possible rapid replacement. 8p.—*Arrow-Hart & Hegeman Electric Co., Hartford, Conn. (180P)*

Air Brake Operators

Catalogs line of air brake power operators for actuating Rockwell-Nordstrom screwed-gland type



PRECISION MIXING WITH NEW TRIPLE ACTION MIXER

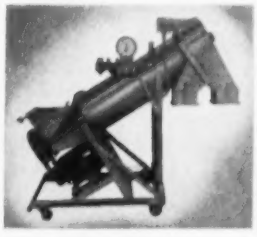
Strong-Scott Mixer Offers Uniform Blending and Mixing in 2 to 7 Minutes with 99.9% Thorough Distribution of Minor Additives.

Now, for the first time, a batch mixer with exclusive "Triple Action" mixing. The blending, folding and mixing action created by this unique triple ribbon and spiral assembly exposes each particle in the mixture to over 10,000 separate mixing actions per minute. The center spiral breaks and tumbles the core of the mix and moves the material to the outer 2 ribbons which convey the ingredients in opposite directions, subjecting each particle to thousands of mixing actions per minute. This produces a well balanced, uniformly mixed product of the highest efficiency known.

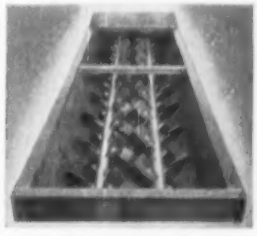
EXCLUSIVE FEATURE — Nylon seals between the tub and shaft, with outboard bearings. This permits cleaning in a matter of seconds . . . is sanitary, long wearing and dustproof. There is no hold up of product from one batch to the next.

The versatile design of the Triple Action Mixer permits feeding from any location at the top with single or multiple discharges to suit individual requirements. Hinged, drop-door bottoms for easy cleanout. Constructed of steel, stainless steel or commercial alloys.

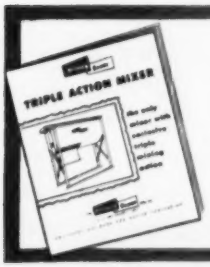
Strong-Scott maintains a complete Customer Service Laboratory with a full line of standard equipment for your convenience, with no obligation to you. Consult Strong-Scott for additional details.



PORTA-BLEND—A portable dry mix and liquid blender capable of quality results at high capacity.



TWIN ROTOR MIXERS—Accurate blending of liquids and dry mix at high or slow speed.



WRITE FOR FREE COLOR BULLETIN

For complete information on the equipment shown above, write to The Strong-Scott Mfg. Co.

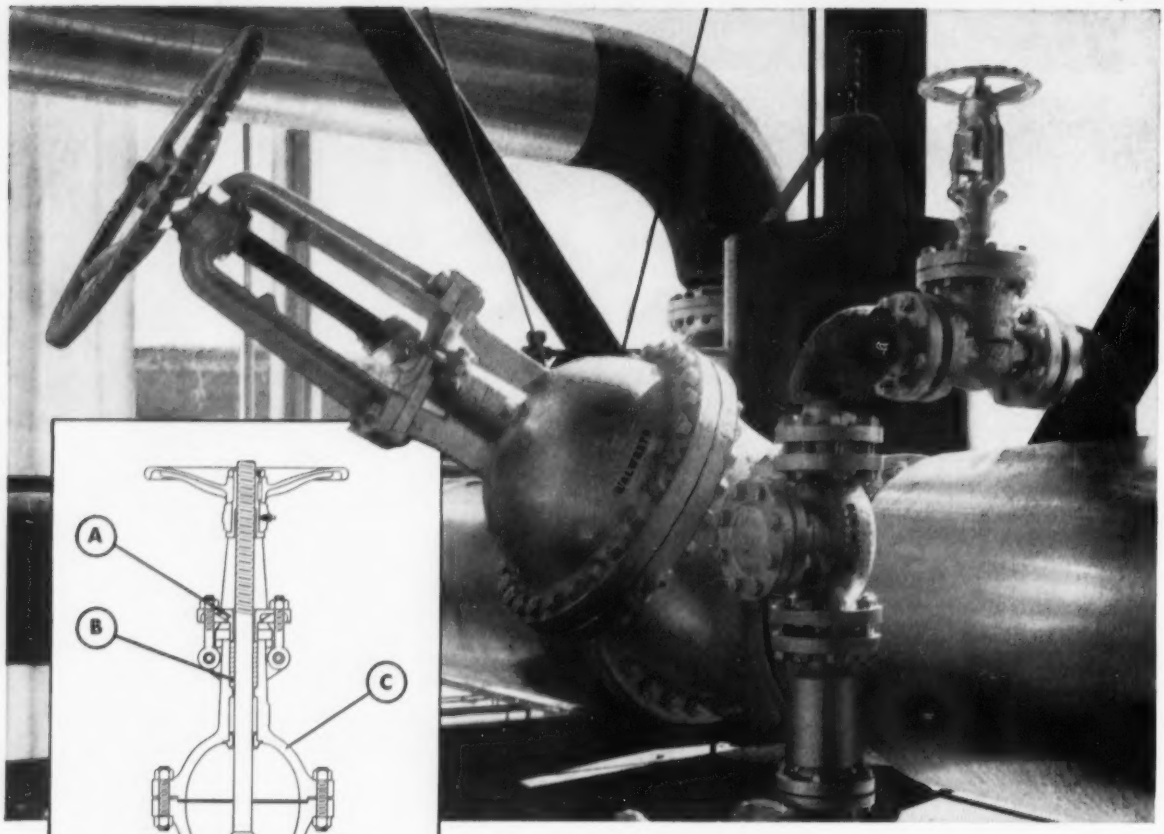
The Strong Scott Mfg. Co.

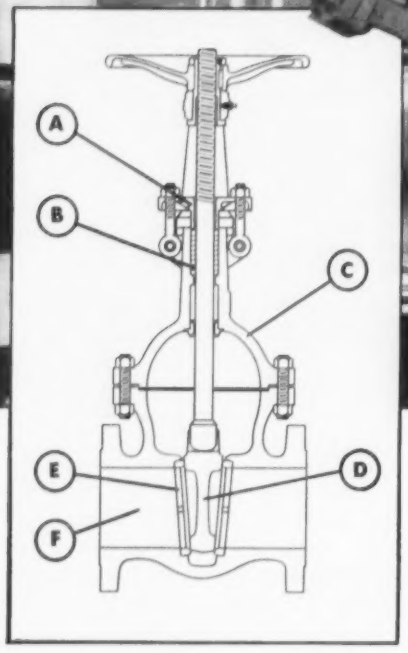
DEPT. FE-07

Equipment Designed for Better Processing

451 TAFT STREET, MINNEAPOLIS 13, MINNESOTA

For more data, circle this page number on card at back →





Walworth Series 150 and 300

CAST STEEL GATE VALVES OFFER YOU THESE FEATURES

for 'round-the-plant service

(A) GLANDS: Clearances between the gland and stuffing box, and gland and stem, are such that the stem cannot be scored even if the gland is pulled down unevenly.

(B) DEEP STUFFING BOXES: More than adequate in all sizes (2" to 24") to assure tightness and maximum packing life.

(C) BONNETS AND BODIES: Engineered to exceed the requirements of all applicable codes and standards. They are tough, durable, dependable.

(D) INTEGRAL GUIDE RIB FACES IN BODY: Machined to insure accurate centering of the gate.

(E) STURDY SEAT RINGS: Bottom-seated so that no recess exists at the back of the ring to cause turbulence, erosion and pressure drop.

(F) STREAMLINED PORTS: Permit unobstructed flow which results in minimum pressure drop and reduces the possibility of erosion.

Walworth Cast Steel Gate Valves can be furnished with either flanged ends or butt welding ends. Roller bearing yokes are available on the larger sizes. On valves 4 inches and larger, by-passes can be furnished. Walworth Cast Steel Gate, Globe and Check Valves from Series 150 to 2500, are available. For Series 600 and higher, we recommend Walworth Pressure Seal Cast Steel Valves. See your Walworth Distributor or write to Walworth for complete information.

WALWORTH

60 East 42nd Street, New York 17, New York

SUBSIDIARIES: ALOYCO ALLOY STEEL PRODUCTS CO. CONOFLOW CORPORATION M&H VALVE & FITTINGS CO. SW SOUTHWEST FABRICATING & WELDING CO., INC. WALWORTH COMPANY OF CANADA, LTD.

wrench-operated valves. Bulletin V-604, 4p.—*Rockwell Manufacturing Co., Pittsburgh, Pa. (180Q)*

Industrial Television

Announces line of industrial television equipment designed to satisfy diverse variety of demands. Bulletin IPV-GC 557, 12p.—*Du-Mont Laboratories, Inc., Clifton, N. J.*

Meat Cutter Thermometer

Specifies special thermometer especially designed for silent meat cutter. 1p.—*Weksler Thermometer Corp., Freeport, N. Y. (183A)*

Strip Chart Recorder

Outlines operations and features of tubeless strip chart potentiometer recorder that uses printed circuits with transistors. Bulletin M, 4p.—*West Instrument Corp., Chicago. (183B)*

Temperature Regulators

Specifies ratings of a series of packless, balanced, self-operating temperature regulators. Sensitivity of unit is demonstrated by fact that valve will travel from fully open to fully closed on a 3 deg. temperature change. Bulletin 503, 4p.—*Cash Standard Stacon Corp., Decatur, Ill. (183C)*

Liquid Metering Units

Helps select meter-register combination for liquid metering jobs. Subjects covered in chart form include how meter saves, list of liquids that can be handled, construction details, register types, and sizes of meter. Bulletin 566, 28p.—*Neptune Meter Co., New York City. (183D)*

Electromagnetic Controls

Extra-large catalog actually holds six separate catalogs in one binding. The six cover automatic transfer switches, remote control switches, contactors, relays, solenoids, and electric plant controls. Contains a wealth of engineering data. Catalog 57-F, 170p.—*Automatic Switch Co., Florham Park, N. J. (183E)*

Flowmeter Elements

Diagrams construction of flowmeter elements stated to give accurate readings even under difficult conditions. Sheet F-1, 4p.—*Potter Aeronautical Corp., Union, N. J. (183F)*

Contact Meter-Relays

Contains facts on contact-meter-relays that both indicate and control almost any condition that can be detected electrically. They are used in various circuits for providing different types of control action. Catalog 4-C, 40p.—*Assembly Products Inc., Chesterland, Ohio. (183G)*

Electronic Control

Explains electronic (electric-electronic) systems for providing control of heating and air-conditioning equipment. Bulletin F-2287-4, 4p.—*Barber-Colman Co., Rockford, Ill. (183H)*

Instruments and Controls

Catalogs a group of coordinated instruments and controls covering most aspects of measuring and controlling flow, temperature, pressure, level, and combustion. 36p.—*Energy Control Co., New York City. (183I)*

MATERIAL HANDLING

Fork-Truck Shock Unit

Shows how to install shock absorber units in fork trucks. Said to reduce spillage and breakage, improve performance, lessen operator fatigue, and give longer truck life. 4p.—*Towmotor Corp., Cleveland. (183J)*

Lubed Pallet Rollers

Pictures pallet rollers, pressure lubricated through grease fittings at end of axle. 1p.—*Frank L. Robinson Co., Oakland, Calif. (183K)*

Steel Belt Conveyor

Explains operation of steel belt conveyor that has V-ropes bonded to underside that travel over grooved sheaves to maintain proper belt alignment. Also has application photos, 2p.—*Sandvik Steel Inc., Fair Lawn, N. J. (183L)*

Gas Powered Lift Truck

Discusses components and applications of a gasoline or LP gas-powered lift truck. Has description, capacity charts, and dimension drawings. Bulletin FS-2071, 6p.—*Clark Equipment Co., Battle Creek, Mich. (183M)*

Ball Bearing Trolley

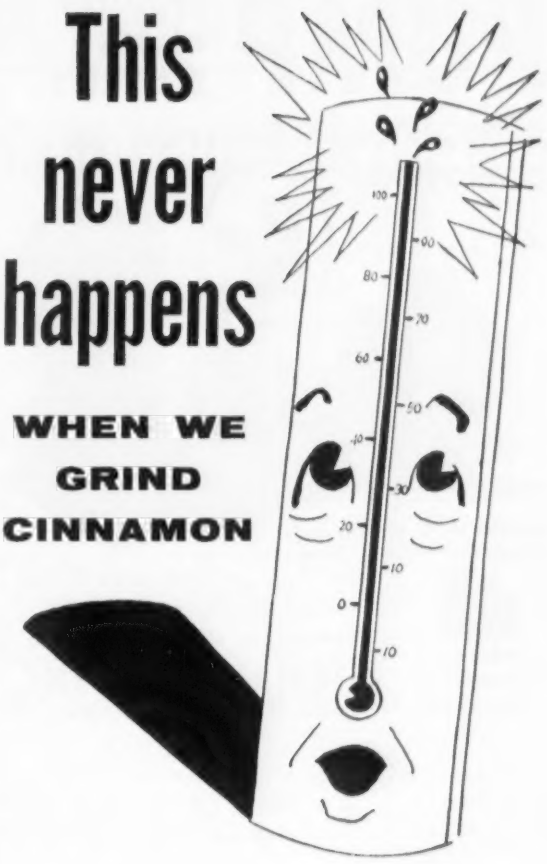
Sectional views and dimensional drawings help describe feature of a line of ball bearing trolley assemblies. Turns, drives, hooks, and 4-wheel trolleys are described accessories. Bulletin 56-2, 4p.—*Anchor Steel & Conveyor Co., Dearborn, Mich. (183N)*

Car Unloading System

Treats of a pneumatic conveying system for unloading cars of dry pulverized and granular material. Includes description of components and dimension

This never happens

WHEN WE GRIND CINNAMON



Grinding methods in common use cause Cinnamon to heat up. Volatile oils are driven off and the product loses its full flavor and strength. Often the heat causes a signed or scorched bitter taste that displeases the customer.

VACUUM GRINDING keeps the temperature rise less than two degrees. It produces a fluffy, velvety fineness with tremendous coating quality. Each sugar crystal is coated or enrobed with cinnamon giving your product a more appetizing look and making it tastier.

Our Cinnamon does not cost you one penny more. Write us telling us whether you use a Saigon Blend, Sumatra, Korintji or Batavia and we'll send samples for your most exacting bake tests.

BECAUSE

Vacuum Grinding

MAKES THE DIFFERENCE

The Baltimore Spice Company

12 S. Front St. **Baltimore 2, Md.**

PUMP LIQUIDS GASES SLURRIES

WITHOUT CONTAMINATION OR CORROSION

Wavelike Motion of Steel Fingers Forces Material Through Tubing

Cap. 0.2 cc. per min. to 4.5 G.P.M.

Prices **$60.00** to **$550.00**

depending on size and accessories

Write for Descriptive Literature

SIGMAMOTOR, INC.

22 North Main St. • Middleport, N.Y.

IT PAYS TO BE THE BIG CHEESE IN CHEESE BUSINESS

MORE CHEESE CUT ON STRASBAUGH AUTOMATIC THAN ALL OTHER POWERED CUTTERS IN THE WORLD COMBINED.

- As many as 80 Pieces in Approx. 45 Seconds
- More Profit on a High Profit Item
- Many Times Less Labor
- Any Size, Any Shape
- Neater Packages
- More Sales

THE BEST WILL COST YOU LESS IN THE END

Write - Phone TODAY

R. HOWARD STRASBAUGH

Engineering and Manufacturing

10990 Santa Fe Avenue Lynwood, California

sketch and chart. The system operates under vacuum and employs a light aluminum nozzle attached to several lengths of flexible hose to provide a movable extension. Bulletin 174, 4p. *Sprout, Waldron & Co., Muncy, Pa. (183O)*

Heavy-Duty Trolley

Diagram trolley equipped with pressure-lubricated wheel, special nuts to protect grease fitting, and felt hub seal, designed for heavy-duty applications. 1p.—*E. W. Buschman Co., Cincinnati. (184A)*

INGREDIENTS

Cottage Cheese Culture

Describes cultured dairy product kit containing envelopes of contamination-free media powder. 2p.—*Creamery Package Mfg. Co., Chicago. (184B)*

Water Soluble Colloids

Discusses four grades of water soluble colloids that are polymerized complexes of mannose and galactose. Properties and applications are covered. 3p.—*Burtonite Co., Nutley, N. J. (184C)*

Marshmallow Ingredient

Reports on use of special ingredient that modifies marshmallow sugar systems and helps retard their hardening rate. Discusses test results and proper application. Bulletin 8, 4p.—*Atlas Powder Co., Wilmington, Del. (184D)*

Cost of Additives

Lists prices of alcohols, aldehydes, fixatives, essential oils, aromatics, colors, concentrated citrus oils, vanilla, and other concentrates. 38p.—*Dodge & Olcott, New York City. (184E)*

Yeast Symposium Report

Contains articles on research of yeast characteristics, growth, and function in baked products. 120p.—*Quartermaster Foods & Container Institute for the Armed Forces, Chicago. (184F)*

Low-Calorie Sweetener

Contents include information on market for low-calorie foods, and information on its use in nine different categories of foods. Also has labelling information and specifications and properties of the additives. 14p.—*E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. (184G)*

Edible Antioxidant

Attractive booklet informs on advantages of employing antioxidant for starch stability and vitamin retention of feeds and foods. Outlines physical characteristics, flowability, color stability, minimum static charge, and economy of the substance. Bulletin C-7-243, 16p.—*Koppers Co., Inc., Pittsburgh. (184H)*

Catalase Concentrate

Suggests applications for catalase (used for the decomposition of hydrogen peroxide) in bleaching, sterilization, supplying free oxygen, preventing radiation damage, and as an antioxidant. Properties are also described. Technical Bulletin No. 5, 3p.—*Fermco Chemicals, Inc., Chicago. (184I)*

Food Colors

Suggests color blends for producing popular shades of food colors. Has sections on preparation and care of stock solutions, use of color in various products, and federal laws. 24p.—*National Certified Colors, New York City. (184J)*

Anti-Foam Agent

Has facts on anti-foam for use with spent brewery yeast, cheese whey, and similar materials. Said to be stable, edible, and effective in small concentrations. 1p.—*Hodag Chemical Corp., Chicago. (184K)*

MANAGEMENT

Research Organization

Discusses qualifications of independent consulting and research laboratory. 4p.—*Evans Research & Development Corp., New York City. (184L)*

Canada Food Brokers

Now available is 1957 listing of Canadian food brokers. Includes officers, directors, and code of ethics. 24p.—*Food Brokers' Assn. Canada, Toronto, Ont. (184M)*

New Products Development

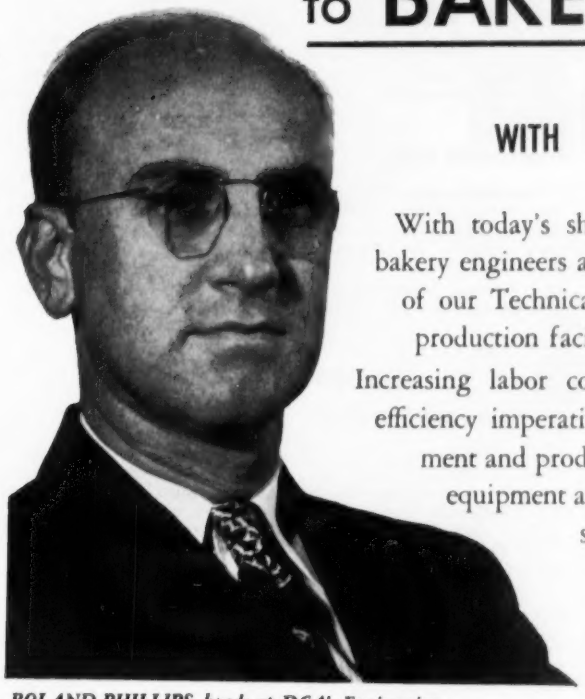
Attractive how-to-do-it booklet gives tips on developing successful new products. Discusses reasons for success and failure, timing, research, financing, and other pertinent factors. 25p.—*Foster D. Snell, Inc., New York City. (184N)*

ABC's of Fire Protection

Informs on insurance savings and other economic benefits made

TO BAKERY ENGINEERS

WITH DONUT DEPARTMENTS



With today's sharp emphasis on PROFITS, more and more bakery engineers are finding it of great value to consult with one of our Technical Servicemen on a re-survey of present donut production facilities.

Increasing labor costs and shorter working hours make greater efficiency imperative. A scientific analysis of your present equipment and production procedure—in the light of the many new equipment advances made in the last two years—may reveal startling savings in labor costs and in increased capacity to handle larger volume.

ROLAND PHILLIPS heads up DCA's Engineering & Technical Staff— every man a practical Donut Engineer.

TO BAKERY ENGINEERS

WHOSE MANAGEMENT IS SEEKING ADDITIONAL PROFITABLE VOLUME

When additional volume is needed . . . it is natural to turn to donuts whose labor costs are lowest in the sweet goods field. Donut sales volume is constantly increasing . . . benefitting from DCA's decades of consistent promotion. Today's new *automatic* variety donut equipment, producing any one of 68 popular donut varieties, opens up a new vast era of increased donut sales.

DCA offers you complete donut service: Engineering consultation, layout plans; automatic equipment; complete line of mixes tailored to your market and needs; sales and merchandising help in the field, at no cost to you.

SEND FOR

this brand new Technical Kit on every phase of Donut Production.

DCA FOOD INDUSTRIES INC.

45 West 36th Street, New York 18, N. Y.

West Coast—1255 67th St., Oakland, Calif. *Canada*—579 Richmond St., W. Toronto

DCA FOOD INDUSTRIES INC.
45 West 36th Street
New York 18, N. Y.

Kindly send me your New Technical Kit on Donut Production.

Individual.....

Firm Name.....

Address.....

City.....Zone....State.....

For more data, circle this page number on card at back →

possible by fire protection. Also describes a variety of fire protection components and systems. Includes 2-page chart of the applications and functions of the different systems. Bulletin 66, 36p.—*"Automatic" Sprinkler Corp. of America, Youngstown, Ohio. (184O)*

Finger Safety Book

Cartoon-illustrated pamphlet warns workers against hand injury. Splinters, careless use of equipment, machinery, and solvents, are all discussed. Stock No. 195.77, 8p.—*National Safety Council, Chicago. (186A)*

Explosion Hazard Finder

Contains check-list of 13 questions that help determine whether uncontrolled flammable gases, vapors, dust, liquids, and other combustibles are making your plant unsafe. Part of folder is sealed until all the questions have been answered. 8p.—*Crouse Hinds Co., Syracuse, N. Y. (186B)*

Construction Detail Sheets

Lists offering of drawings of scaffolds, dollies, racks, bins, and the like, that emphasize safe construction practices. 4p.—*National Safety Council, Chicago. (186C)*

TRANSPORTATION

Continuous Truck Cooling

Gives description, by components, of continuous truck refrigeration system weighing 410 lb. Also has separate installation construction sheet. Bulletin MR-56-B, 5p.—*Tranter Mfg., Inc., Lansing, Mich. (186D)*

Air Transport Statistics

Contains facts and figures covering 20 years of passenger and freight air-traffic. Facts and Figures, 18th edition, 28p.—*Air Transport Assn. of America, Washington, D. C. (186E)*

Fifth Wheel Suspension

Detailed drawing shows simplicity of light-weight fifth-wheel tandem trailer suspension. Has application information. Bulletin MO-100, 4p.—*A. O. Smith Corp., Los Angeles. (186F)*

Bulk Solids Trailer

Photos and diagrams show trailer designed for transportation of sugar and other pulverized materials. Specifications also included. Bulletin A-19, 4p.—*Fuller Co., Catasaqua, Pa. (186G)*

KING SHARP FREEZE SYSTEMS

help you deliver more and better frozen foods at greater profit!

★ Faster freezing with turbulent frigid air movement by King Systems preserves food flavor, color and texture and minimizes loss thru dessication and bacterial activity.

★ King Systems give you engineered uniform distribution of clean, cold air that eliminates frost on packages and loss from soil and "old product" appearance.

★ With space-saving features of King unit and ceiling ductwork the freezing capacity of your room is increased, permitting greater production, especially during peak periods.

★ Simple air-defrost of unit coils in a few minutes means no interruption in production schedules.

★ With all floor space available, you can adopt more efficient handling methods, speed-up inventory turnover and reduce labor costs.

★ More rapid removal of heat from products and efficient coil evaporator permit shorter compressor hours and lower power costs.

★ King Sharp Freeze Systems are specifically designed by pioneers in the air movement field for all food industry applications . . . blast freezers, freezing tunnels, cold storage warehouses, storage freezers . . . for processing, freezing or storage of meats, poultry, fish, fruits, vegetables, juices, ice cream, baked goods, candy.

Write today for further information. Our engineering staff is at your service.

THE King COMPANY OF OWATONNA

905 North Cedar Street • Owatonna, Minnesota

High-capacity, new sifter solves many problems

Dust-tight — can be made gas-tight!
Only from 28 inches to 45 inches headroom required!
Screen readily accessible for rapid cleaning!
Carbon steel construction — stainless steel parts available!

Write For Bulletin 160

RICHMOND / SPROUT-WALDRON

GYRO-SHAKER

It has proved itself highly successful in big-capacity applications and for handling materials such as sugar, starch, etc. Available with single screen areas ranging from 5 sq. ft. to 35 sq. ft. and up to 70 sq. ft. with two screens. Get details now.

PR/506 F

SW **SPROUT-WALDRON**

Manufacturing Engineers Since 1866

35 LOGAN STREET, MUNCY, PA.

EQUIPMENT FOR SIZE REDUCTION, MIXING & BLENDING, PELLETING & CUBING, BULK MATERIALS HANDLING, PRODUCT CLASSIFICATION

(Illustrations represent actual crystals of 'Roche' vitamin A palmitate and acetate and of 'Roche' dry vitamin A acetate granules, under high magnification, using shadow technique.)

VITAMIN A COMES RIGHT FROM ROCHE

Roche has proved time and again that it is a source of vitamin A far superior to the livers of fish. Look at these advantages of 'Roche' vitamin A—stability • uniformity • no "fishy" taste or after-taste • high purity • constant availability • economy.

Roche produces all the popular types of vitamin A — the liquid types, the dry types, and the special types — to meet the most exacting requirements of purity for margarine and food manufacture, and the most rigid U.S.P. standards for pharmaceutical manufacturing — by the tons, by the famous Roche synthesis.

Roche assures the utmost excellence, the utmost experienced care, and the quality you require. Packaging designed with your needs in mind brings you vitamin A right, from Roche.

ORDER *right* . . . ORDER *from Roche*

VITAMIN DIVISION

HOFFMANN-LA ROCHE INC.

NUTLEY 10, NEW JERSEY, NUTLEY 2-5000 • NEW YORK: OXFORD 5-1400

Roche has all types of Vitamin A
-for pharmaceuticals
food products
cosmetic preparations

Take your choice of the following types of vitamin A 'Roche'. They have been made especially with your particular problems in mind.

LIQUID TYPES

Type P1MO vitamin A palmitate—1,000,000 U.S.P. units per gram, standardized by addition of edible vegetable oil. This type is a highly refined product containing well-proven stabilizing factors of the Roche synthesis. *Experience has shown that this type meets the great majority of requirements.*

Type P1MO/ BHA vitamin A palmitate—Same as type P1MO above plus antioxidant protection.

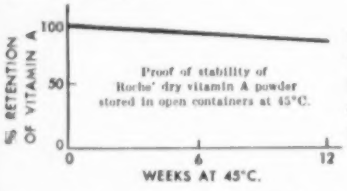
Type A1MO vitamin A acetate—1,000,000 U.S.P. units per gram, standardized by addition of edible oil. Contains well-proven stabilizing factors of the Roche synthesis.

Type P1.3 vitamin A palmitate—Ranging between 1,350,000 and 1,650,000 U.S.P. units per gram. Contains no oil addition. Ideally suited for oil-free preparations. Stability is similar to type P1MO.

Packaging—All liquid types of 'Roche' vitamin A are packed under inert gas in seamless containers. Nominal quantities are shipped in widemouth aluminum bottles. For large orders, a specially-designed aluminum transport can holding 50 kilos is recommended. A dispensing attachment is available.

DRY TYPES

'Roche' dry vitamin A acetate, and vitamin A and D_2 powders have great advantages.



First, dry vitamin A acetate 'Roche' has high stability in tablets, hard and soft gelatin capsules, and powdered food supplements.

Second, having an irregular surface the Roche product does not separate from other dry ingredients during mixing or vibration.

Third, Roche powders do not stick to machine dies and punches. Capping and spring do not occur during compression.

Fourth, extrusion loss is low. This advantage comes from the product's excellent resistance to the high pressures found in tablet making.

Powdered food supplements use 'Roche' dry vitamin A and D_2 for ease of manufacture.

DRY TYPES (continued)

The following Roche types have been found most popular:

Type 500-dry vitamin A acetate. 500,000 U.S.P. units per gram.

Type 325-dry vitamin A acetate. 325,000 U.S.P. units per gram.

Type 500 A-50D-dry vitamin A acetate and vitamin D_2. 500,000 U.S.P. units of vitamin A and 50,000 U.S.P. units of vitamin D_2 per gram.

Mesh Sizes: Each type available in two mesh sizes: No. 40 and No. 60.

Packaging—All types of 'Roche' dry vitamin A are packed in polyetheylene bags, with protective sealer, in drums and in 1 and 2 kilo tamperpruf metal containers. Small quantities in amber s.c. bottles.

SPECIAL BLENDS

Roche has various potencies of vitamin A in vegetable oil, alone or with beta carotene 'Roche' or vitamin D_2, according to your formula. These are widely used for fortifying margarine and other food products. With a Roche blend of vitamin A and carotene, processors have the advantage of *fortifying* and *coloring* their products in just one plant operation.

Custom-made blends of 'Roche' vitamin A and other oil-soluble ingredients such as vitamin E 'Roche' are also available.

These are packaged in batch size, sanitary tin cans or in bulk packings to suit your manufacturing operation.

Beta CAROTENE 'Roche'

Use 'Roche' beta Carotene to supply *safe, convenient* coloring combined with *nutritional* value for margarine, shortening, butter, cheese, yellow baked goods, edible oils, and other foods.

Beta carotene is the natural coloring matter of butter and other dairy products. It is a constituent of cereal grains, alfalfa, carrots, and other vegetable foods. 'Roche' beta Carotene imparts a *true* natural yellow color to your foods without any trace of green. 'Roche' beta Carotene adds nutritional value; theoretically, one gram equals 1,666,667 millions U.S.P. units of vitamin A activity. Extensive tests show that "Roche' beta Carotene has excellent color stability.

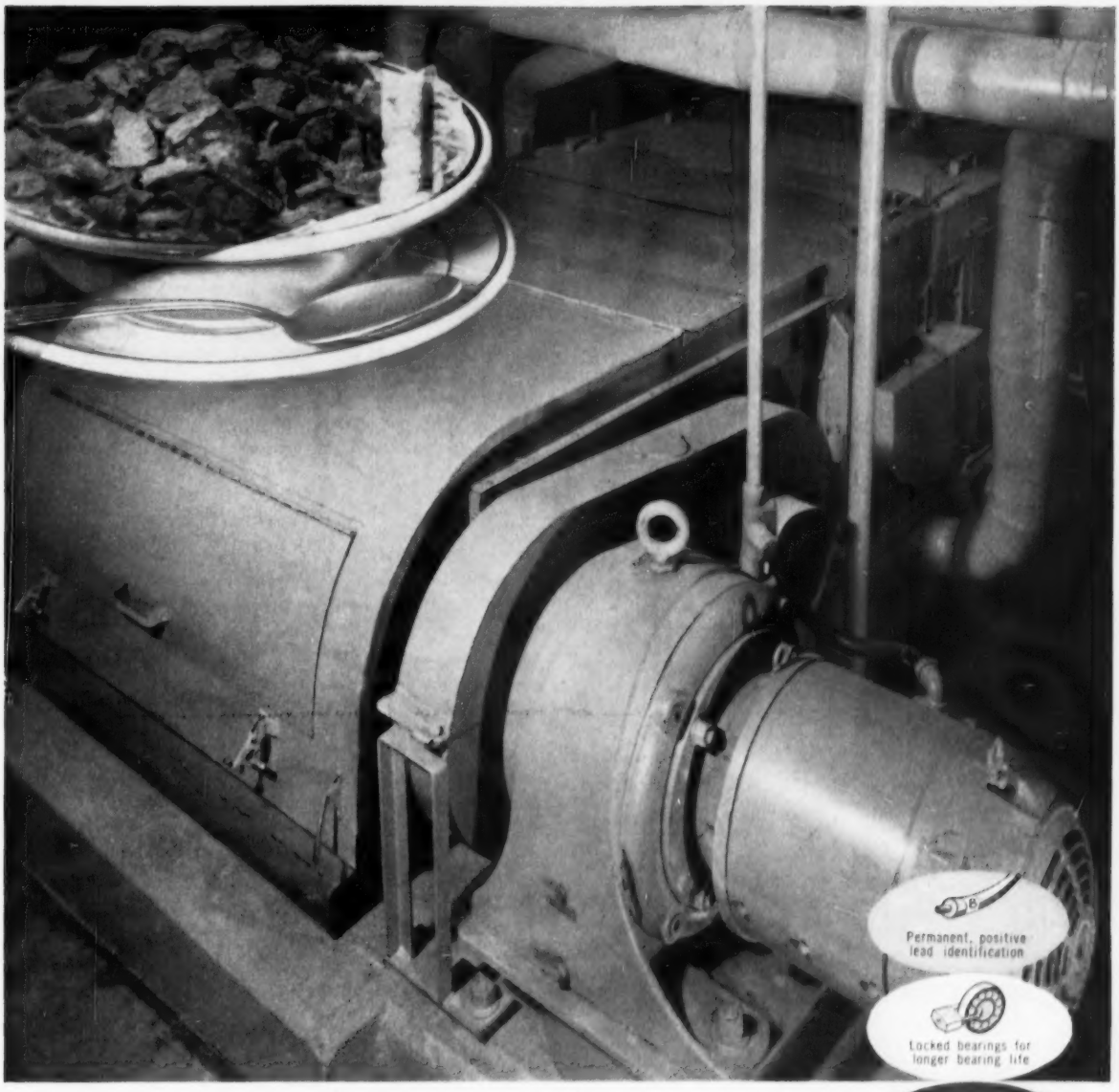
Call **ROCHE** *for Vitamins*

VITAMIN DIVISION • **HOFFMANN-LA ROCHE INC.** • NUTLEY 10, N. J.

NUtley 2-5000 • In New York City dial OXford 5-1400

Pacific Coast distributor: L. H. BUTCHER, San Francisco, Los Angeles, Seattle, Portland, Salt Lake City

In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West, Montreal, Quebec



How to keep corn-flakes moving...

Louis Allis motors provide reliable drives, uninterrupted process flow

Modern food processing systems require dependable drives to keep production flowing smoothly. A minor motor breakdown often means costly waste, as well as loss of production.

That's why many segments of the food industry are turning to Louis Allis for help in powering food-handling machinery. Louis Allis engineers, expert in food systems installations, are available to advise you on correct drive applications. Their recommendations often can save you money on the initial installation, as well as eliminate a source of future problems.

What's more, all Louis Allis equipment is pleasingly styled to blend well into today's modern publicly-viewed food plants, where appearance is important.

Why not ask for a list of food plants in your area using Louis Allis motors? See what *they* say. Contact your Louis Allis District Office, or the Louis Allis Co., 442 E. Stewart Street, Milwaukee 1, Wis.

LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES

For more data, circle this page number on card at back →

DO IT BETTER—DO IT THE COG WAY

COG gives you

- **Improved performance**
- **Ease of cleaning**
- **Complete sanitation**
- **Greater safety**

COG PROCESSES

SOLIDS • LIQUIDS • SLURRIES • PASTES

COMMINUTION • SPRAY BLENDING • COLLOIDAL SUSPENSIONS • CONTINUOUS SYSTEMS
HOMOGENIZING BREAKDOWNS • RECONSTITUTION • INTENSIVE MIXING • EMULSIFYING

COG CORPORATION is a division of MOTIOGRAPH, INC., founded in 1896 by the late Alvah C. Roebuck (co-founder of Sears, Roebuck and Co.). It is one of the oldest and largest manufacturers of quality precision equipment.

The immense production facilities of MOTIOGRAPH are available to meet the maximum demands of industry.

SEND FOR THE BROCHURE ON THE COMPLETE COG LINE

division of
MOTIOGRAPH, INC.
Established 1896

THE COG CORPORATION

4441 W. LAKE ST., CHICAGO 24, ILL., U.S.A.

← For more data, circle this page number on card at back

USEFUL NEW BOOKS & GOVERNMENT PUBLICATIONS

Management Looks at R & D

RESEARCH AND DEVELOPMENT IN THE CORPORATION. *Published by American Institute of Management, 125 E. 38th St., New York City 16. 1957. 93 pages, cloth. Price:* $12.

This compact monograph contains the conclusions reached during a nine year study of top managements (General Electric, Procter and Gamble, Corning Glass Works, to name a few) by the AIM.

The study traces the development of the research department from a "stepchild" to a highly respected and indespensable facet of effective management. An annual expenditure of $5 billion testifies to the truth of this.

Food industry management looking for answers to questions on how much they should allot to research and development, or how they should organize a research department, will find valuable clues in this book.

Lab Man's Reference

CEREAL LABORATORY METHODS. *Published by American Assn. of Cereal Chemists, University Farm, St. Paul 1, Minn. 1957. 528 pages, cloth. Price:* $11.

This sixth edition of a standard food industry reference has changed its manner of presentation. Chapters have been discarded for a division into 100 categories consisting of "determinations" (determinations of acids, amylase activity, etc.). Each major category is further divided into specific tests.

Many new methods have been added, including testing of prepared mix ingredients, and physical properties of dough.

This book is of definite value to the laboratory man and technologist.

Guide to the Soybean

SOYBEANS FOR HEALTH, LONGEVITY, AND ECONOMY *by Dr. Philip S. Chen. Published by The Chemical Elements, Box 315, South Lancaster, Mass. 1957. 241 pages, cloth. Price:* $3.

In addition to being the only vegetable food that yields a complete protein, the soybean is the chief vegetable oil consumed in the United States. These facts mirror the growing importance of the food, nationally, and internationally.

Dr. Chen discusses the nutritional and economic advantages of the bean, giving detailed instructions for the full utilization of the food—from planting to processing.

Included are methods for preparing soy milk, soy cheese, soy sauce, and soybean sprouts, as well soy flour, grits, and flakes.

The Call for Engineers

BUILDING AN ENGINEERING CAREER. *By Clement C. Williams and Erich A. Farber. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York City 36. 1957. 299 pages, cloth. Price:* $4.75.

Directed at the engineering student, this book presents a preview of the engineering profession and its relationship to social and economic organization.

It is designed to help the beginner develop efficient study habits and learn to deal with technical data.

A brief history of engineering is included.

Booklets & Reports

PROTECTING PERISHABLE FOODS DURING TRANSPORTATION BY TRUCK. *Published by USDA, Washington, D.C. 70 pages, paper. Price:* $.30. Manual covers protection of meats, fruits, melons, vegetables, poultry, and dairy products.

CONSULTING SERVICES, 1957. *Published by Assn. of Consulting Chemists and Chemical Engineers, New York City 17. 1957. 136 pages. Price:* $1. Listing of consultants, including staff, scope, and activities.

DEFENSE GUIDES FOR COMMERCIAL FOOD FACILITIES (*Agricultural Information Bulletin No. 169*). *Published by USDA, Washington 25, D. C. 1957. 12 pages. Price:* $10. Discussion on how vulnerability of food facilities to attack can be reduced.

PROFITABLE RETAIL STORE METHODS. *Published by American Institute of Food Distribution, Inc., New York City 17. 48 pages. Price:* $.50. *Guide Book (1957 edition) covers subjects of impulse buying.*

Recent Inventions

PRODUCTS

Cold Mix Cake Icing Containing Shortening, Sugar, Water-Soluble Cellulose Ether—M. A. Weaver, Ithaca and G. K. Greminger, Jr. to Dow Chemical Co., Midland, Mich. No. 2,785,982. Mar. 19, 1957.

Solid Seasoning in Form of Friable Sphere-Like Grains Comprising Spray-Cooled Triglyceride, Extract of Hot Pungent Aromatic Spice—C. W. McMath, Fort Worth, Texas to Buckeye Cellulose Corp., Cincinnati. No. 2,785,983. Mar. 19, 1957.

Roquefort-Type Cheese With 0.7 mg. to 1.5 mg. Iron Added per 100 ml. Milk—S. G. Knight to Wisconsin Alumni Research Foundation, Madison, Wis. No. 2,786,762. Mar. 26, 1957.

Topping Concentrate Comprising Hardened Fat, Syrup, Ionic Emulsifier, Non-Ionic Emulsifier—R. H. Price, New York City. No. 2,786,765. Mar. 26, 1957.

Fixed Flavor Gelatin Product Having 0.05 to 1.0% Carboxymethyl Dextran and Citrus Oil—L. J. Novak to Midland Chemical Corp., Dayton, Ohio. No. 2,786,767. Mar. 26, 1957.

Puffed Cereal Having Sugar Coating, Flaked Cereal Adhered to Sugar—L. J. Huber to General Mills Inc., Minneapolis. No. 2,788,277. Apr. 9, 1957.

Icing-Composition Comprising Sugar, Carboxymethyl Dextran Containing Two to Three Carboxymethyl Groups Per Anhydroglucopyranosidic Unit.—H. A. Toulmin, Jr., to Midland Chemical Corp., Dayton, Ohio. No. 2,789,911. Apr. 23, 1957.

Food-Flavor Intensifier Consisting of Gentian and L-Glutamic Acid.—E. B. Glickman, Chicago. No. 2,790,719. Apr. 30, 1957.

Dry Pie-Crust Mix Containing 25-42% Shortening, Greased Onto Flour, and Formed Into Blocks.—R. W. Callaghan and T. R. Freer, Minneapolis, to General Mills Inc. No. 2,791,506. May 7, 1957.

Meat-Products Consisting of Shredded Particles Coated With Meat Melts, Edible Preservatives, and Moisture Absorbent.—E. Fresch, Hannibal, N. Y. No. 2,791,507. May 7, 1957.

EQUIPMENT

Egg-Grader Having Inclined Runway Comprising Weighing Segment Table Tiltable Longitudinally, Dumping Segment, Balance and Latch Means.—E. J. Gross, Chicago. No. 2,773,597. Dec. 11, 1956.

Nutcracker Comprising Base, Fixed-Cylinder, Nutcracker Cup Within Cylinder, Shell Injector Pins Movable Into Opening of Cup—J. C. Fontaine, Shreveport, La. No. 2,783,802. Mar. 5, 1957.

Corn Cutter Comprising Feeder, Knife, Gaging Finger for Adjusting Knife on Carrier—C. E. Kerr, Hoopeston, Ill. to Food Machinery & Chemical Corp., San Jose, Calif. No. 2,787,273. Apr. 2, 1957.

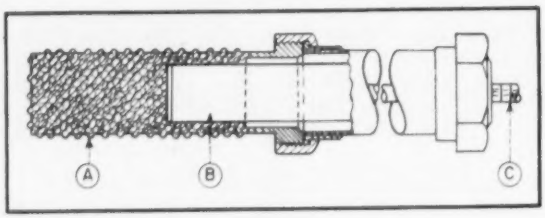
Beet Screener Comprising Fixed Vat, Lateral Spout, Rotary Bottom With Outstanding Radial Bars—J. Couplet, Wez-Velvain, Belgium. No. 2,787,375. Apr. 2, 1957.

Want more information on any of these recent patents—if so, you may obtain detailed printed copies by writing direct to the U. S. Patent Office, Washington, D. C., giving serial numbers of those you want and enclosing 25¢ for each copy.

Frozen-Milk Machine With Vertical Chamber and Agitator, Transparent Upper Section.—P. Martin, N. Hollywood, Calif. to M. Lipsky, Los Angeles. No. 2,788,643. Apr. 16, 1957.

Food-Drying Apparatus Comprising a Hollow, Perforated, Rotatable Roll Mounted Parallel Pulley, Whereby Cooked Foodstuffs Can Be Conveyed to Pocket Between Roll and Pulley for Removing Skin.—R. A. F. Templeton, London, England. No. 2,788,732. Apr. 16, 1957.

Fruit-Peel Press Comprising Box-Like Enclosure, Two Aligned Horizontal Pressure Plates, Spring Means For Returning Plates After Squeezing Peel Slice.—G. Bardini, New York City. No. 2,788,736. Apr. 16, 1957.



Firmness Testing Device for Cheese-Curd

Apparatus for gaging the firmness of cheese-curd comprising the following components: (A) Perforated container; (B) plunger for compressing curd mass with momentary impact sufficient to cause some of the mass to exude through perforations; (C) means to indicate degree of penetration of plunger into mass.—Erik Lundstedt, Needham, to H. P. Hood & Sons, Inc., Charlestown, Mass. No. 2,791,903. May 14, 1957.

Parter-Member for Separating Sheets From Dough Feeding Rolls, Including Yoke Pivotally Mounted Parallel and Horizontal to Axis of Sheeting Roll, Parter-Blade Mounted on Free-End of Yoke.—A. C. Rhodes, Portland, Ore. to Capitol Products Corp., Mechanicsburg, Pa. No. 2,788,752. Apr. 16, 1957.

Peach Feeding, Orienting, Assorting, Transferring, Slitting and Pitting Machine.—H. H. Skog, Olympia, Wash. to Special Equipment Co., Portland, Ore. No. 2,788,818. Apr. 16, 1957.

Fruit-Cutter and Pitter Comprising Conveyor, Chains Adapted to Hold Fruit, Cutter.—P. H. Guatelli and L. A. Blank, Godoy Cruz, Mendoza, Argentina. No. 2,788,819. Apr. 16, 1957.

Fruit-Peeling Machine Having Carriage, Rods Adapted to Impale Fruit Along Longitudinal Axis, Fruit Support Members, Cutter Means.—W. de Back, St. Nicholas-Waes, Belgium, and S. Puccinelli, San Jose, Calif. to Food Machinery & Chemical Corp., San Jose. No. 2,789,603. Apr. 23, 1957.

Bread-Slicer Having Spaced Movable Blades, Normally Open Hydraulically Operated Loaf Clamp.—W. H. Solomon, to Oliver Machinery Co., Grand Rapids, Mich. No. 2,789,606. Apr. 23, 1957.

Dough-Forming Machine Comprising Pair of Superimposed Conveyors, Dough Piece Forming Element, Transfer Means.—L. Orr to H. L. Callaway and C. T. Brock, Jr., Chicago. No. 2,790,398. April 30, 1957.

Pea-Viner and Sheller Including Longitudinally Spaced Battering Boards, Vine Advancing Means, Picker Fingers for Removing Pods.—G. H. Rossman, Cut Bank, Mont. No. 2,790,444. Apr. 30, 1957.

Beef-Tongue Molds Comprising Box-Like Framework Provided With Inclined Slide Members, Overhead Rail Suspending Means, Tongue Trays With Pins for Holding to Slide Members.—M. Berk, Englewood, N. J. No. 2,790,993. May 7, 1957.

PROCESSES

Preserving Eggs With Homogenized Mixture of 2 Methyl 1-4 Naphthoquinone and Glycerin—A. Rapport to L. Ratner, Chicago. No. 2,786,770. Mar. 26, 1957.

Cooling Produce by Immersing in Refrigerant, Reducing Pressure, Removing Produce and Subjecting to Vacuum, Reimmersing Under Vacuum, Returning Pressure, Removing Produce—N. Julius, Rivera, Calif. No. 2,787,141. Apr. 2, 1957.

Processing Headed, Gutted, Finned Fish Including Briefly Heating, Impinging High-Pressure Fluid Stream on Fish, Cooking, Jarring to Detach

Flesh From Bones, Screening—D. J. Heald, Lowell, Mass. to General Foods Corporation, White Plains, N. Y. No. 2,787,549. Apr. 2, 1957.

Making Multiphase Oil Preparation Comprising Fat, Moisture, Baking Emulsifier—C. H. Struble and R. E. Stephens to Miami Margarine Co., Cincinnati. No. 2,787,550. Apr. 2, 1957.

Dehydrating Potatoes by Precooking, Cooking, Mashing, Drying in Substantially Monocellular Thickness—J. Cording, Jr., Philadelphia, and M. J. Willard, Jr., Glenside, Pa. to USDA. No. 2,787,553. Apr. 2, 1957.

Spray-Drying Aqueous Coffee Extract by Disbursing Gas to Produce Foam, Spray-Drying—I. M. Reich, New York City and W. R. Johnston, Chappaqua to Standard Brands, Inc., New York City. No. 2,788,276. Apr. 9, 1957.

Producing Bright Scarlet Color in Meat by Subjecting to Contact With Ascorbic Acid, Salt, and Oxygen—L. J. Zimont, and H. M. Coleman, Chicago, and E. W. Hopkins, Hinsdale, Ill. to Armour & Co., Chicago. No. 2,788,278. Apr. 9, 1957.

Impregnating Thawed Fruits, Vegetables, and Meats, With Liquid Food Ingredient by Contact—D. G. Guadagni, Lafayette, Calif. to USDA. No. 2,788,281. Apr. 9, 1957.

Sterilizing Milk by Deaerating, Homogenizing, Holding at 265 F. for 2 min., Cooling, Adding Oxygen Equivalent to Predetermined Cooked-Flavor Producing Reducing Substances, Sealing Asceptically—A. P. Stewart, Jr., Berkeley, B. F. Wilcox, Gustine and R. A. Johnson, San Jose, Calif. to Foremost Dairies, Inc., Oakland, Calif. No. 2,788,283. Apr. 9, 1957.

Heating Prunes In 120C. Water to Tenderize, Cooling Abruptly to Inhibit Browning.—T. A. Schwarz, Los Gatos, to California Prune & Apricot Growers Assn., San Jose, Calif. No. 2,789,057. Apr. 16, 1957.

Preventing "Burning On" in Heat-Sterilizing Canned Products by Introducing a Thin Layer of Water Between Corners Formed by Ends and Sides of Can.—C. O. Ball, New Brunswick, N. J. and R. Baker, Theresa, Wis. to The United Products Co., Westminster, Md. No. 2,789,058. Apr. 16, 1957.

Recovering Glutamic Acid From Beet Sugar Molasses Waste Liquor by Barium Hydroxide Alkaline Hydrolysis.—F. A. Hoglan, Glenview and M. J. Blish, Evanston, Ill. to International Mineral & Chemical Corp. No. 2,789,135. Apr. 16, 1957.

Producing a Bottom- or Top-Fermented Beer Having a High Malt Extract and a Low Alcohol Content.—A. Haselbach, Saarbrucken, Germany. No. 2,789,907. Apr. 23, 1957.

Preparing Readily Sliced Hams Having Flavor of Those Smoked With Bone In, by Removing Bone From Pickled Ham, Replacing A Bone, Smoking, Removing Bone.—A. L. Doepken, Wheeling, W. Va. No. 2,789,908. Apr. 23, 1957.

Freeze-Drying Soft Cheese Including Step of Freezing at a Rate Such That it Requires at Least ½ Hr.—E. W. Slosdorf, Forest Grove, Pa. and W. H. Hamilton, Philadelphia to F. J. Stokes Corp. No. 2,789,909. April 23, 1957.

Sterilizing Butter by Removing Thermolabile Substances From Cream With Water, Centrifuging, Adding Bacterial Culture to Remove Rest of Thermolabile Substances, Concentrating Cream, Sealing Into Containers, Sterilizing. — M. Vermeulen, Etterbeek, Belgium. No. 2,789,910. Apr. 23, 1957.

Heating by Subjecting to Combined Actions of Two Electrical Energy Fields to Bring About Internal Heating and Smoke Penetration. — A. F. Davis, Jr., Somerville, N. J. to Research Corp., New York City. No. 2,789,914. Apr. 23, 1957.

PACKAGING

Poultry Packager Employing Table, and Two Feeding Elements and Members Spaced to Seal Ends of Thermoplastic Package—M. I. Darrow, Chicago and J. B. Hanner, Oak Lawn, Ill. to Swift & Co., Chicago. No. 2,787,103. Apr. 2, 1957.

Beverage Infusion Package Comprising Pair of Thermoplastic Treated Filter Paper Sheets, Reinforcing Strips,

3 WAYS TO MEASURE TEMPERATURE

bi-metal
THERMOMETERS
for industrial and "built-in" needs

Overwhelmingly preferred because of their all-metal ruggedness, stability and long life. In heavy duty types, straight and angle forms, 6″ and 5″ dia heads — industrial types, angle form, 3″ and 2″ heads; stainless steel stems, lengths from 2½″ to 24″. Ranges low as — 100 F to high as 1000 F; accuracy 1% of range.

filled system
THERMOMETERS
for remote readings—alarms

Available with mercury, liquid, gas filled, or vapor pressure actuations in 5″, 6″ and 8″ dial sizes — for wall or flush mounting. Models to indicate as low as — 325 F or as high as 1000 F. Available with adjustable electrical contact and index pointer for signal or alarm needs.

electrical resistance
THERMOMETERS
for remote and multiple readings

Resistor bulb permits remote temperature readings — and by use of several bulbs, several different remote temperature measurements can be made using a selector switch. Accuracy 1% of full scale. Range low as — 100 to high as 500 F.

For literature write . . .
Weston Electrical Instrument Corp., Newark 12, N. J.

WESTON A DAYSTROM UNIT
THERMOMETERS

Heat Sealed and Stitched—N. Dannenhoffer, Ridgewood and A. Einsle, Elmhurst to Eppens, Smith Co., Long Island City, N. Y. No. 2,787,548. Apr. 2, 1957.

Dehydrated-Food Package Comprising Two Sheets of Gas-Permeable Resilient Material Enclosing Desiccant and Slidable Into Container.—L. H. Walker, Berkeley, Calif. to USDA. No. 2,789,369. Apr. 23, 1957.

Ice-Cream Filler Comprising Supply Tube, Filler Pistons, Drive Means, Container Support and Advance Means, Vibrator.—W. C. Huntting, Falmouth, Mass. No. 2,789,588. Apr. 23, 1957.

Wedge-Type Container and Hermetically Sealable Cover of Resilient Thermoplastic.—E. F. Tupper, Upton, Mass. No. 2,789,608. Apr. 23, 1957.

Beer-Keg Air-Filter for Compressed Air Line.—D. Zurit, Teaneck, N. J. No. 2,789,654. Apr. 23, 1957.

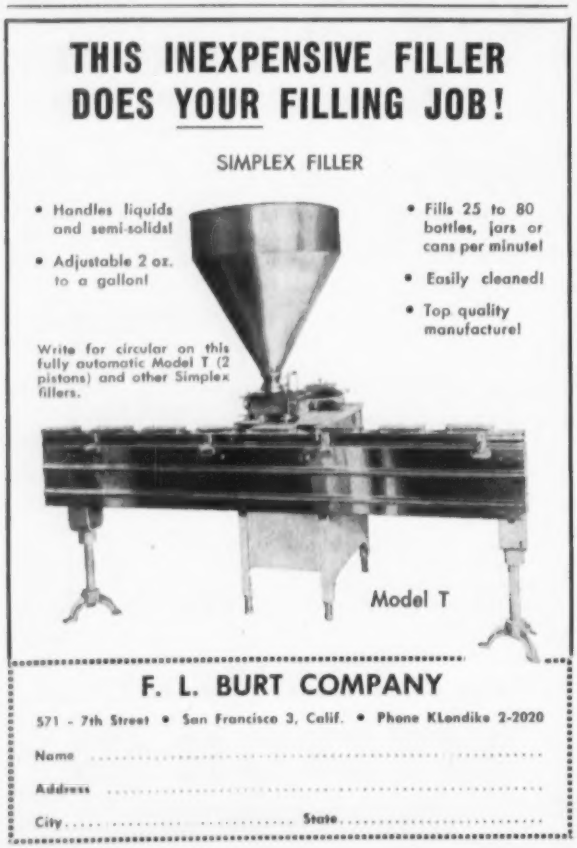
Re-Usable Bottle-Cap for Carbonated Beverage Comprising Resilient Element Having One End Apertured and Other End Capped.—H. B. Demke, San Gabriel, Calif. No. 2,789,717. Apr. 23, 1957.

Cutting-Guide for Rectangular Block of Soft Plastic Food Consisting of Pair of Container Flap Members That Define Guide Space for Receiving Food and Having Guide Edges for Engaging Cutting Blades.—H. B. Heath, Bethlehem, Pa. No. 2,789,913. Apr. 23, 1957.

Vacuum-Sealing Flexible Packages by Placing in Vented Rigid Container, Evacuating, Releasing Vacuum to Cause Sealing by Action of Atmospheric Pressure Acting Against Exterior of Evacuated Packages.—P. B. Hulkrans, Shorewood, Wis. to Milprint, Inc., Milwaukee. No. 2,790,284. Apr. 30, 1957.

Polyethylene-Container Comprising Open-Top Receptacle With External Screw Thread, Cover.—R. H. Close, Birmingham, Mich. to Plastray Corp., Detroit. No. 2,790,475. Apr. 30, 1957.

Container-Top That Comprises Frangible Sealing Member, Opener Means.—L. Fried, Philadelphia. No. 2,790,577. Apr. 30, 1957.


THIS INEXPENSIVE FILLER
DOES YOUR FILLING JOB!
SIMPLEX FILLER
• Handles liquids and semi-solids!
• Adjustable 2 oz. to a gallon!
• Fills 25 to 80 bottles, jars or cans per minute!
• Easily cleaned!
• Top quality manufacture!
Write for circular on this fully automatic Model T (2 pistons) and other Simplex fillers.
Model T
F. L. BURT COMPANY
571 - 7th Street • San Francisco 3, Calif. • Phone KLondike 2-2020
Name
Address
City State

Strahman
AUTOMATIC WATER-SAVER
SPRAY NOZZLE
FULL HAND GRIP
MIST
LIGHT SPRAY
COARSE SPRAY
SOLID STREAM
AUTOMATIC SHUT-OFF
Ideal for Dairy and Food Industries
The Strahman Spray Nozzle does a better job with the least amount of water. This precision made nozzle enables the operator to get any type stream of water to do his job by simply pressing the lever. A soft spray is sent forth with slight pressure on the lever, and a strong straight stream may be had by pushing the lever all the way down. This convenient control of the wash water assures better cleaning with a lot less effort. The nozzle automatically shuts off the moment the lever is released, thereby eliminating all waste of water.
RENEWABLE RUBBER COVER. The sturdy cover protects the nozzle and your equipment against knocks and dents. When the cover becomes worn, replace it with a new one.
CONSULT YOUR DEALER
STRAHMAN VALVES, INC., 16 HUDSON STREET, NEW YORK 13, U. S. A.

In actual road tests . . .

Dodge won top honors in test after test between comparable models of all three low-priced trucks. Special high-speed camera records actual finish of hill-climb test. From a standing start, test crews raced all three trucks up a 32% grade. Dodge was *first* by five lengths.

and on your job . . .

Dodge gives you more V-8 power, in every weight class, than either of the other two low-priced trucks. From 204-hp. pick-ups to 232-hp. tandems, the extra power you get in a Dodge means an on-the-job performance bonus for you. It means greater economy, too, because it cuts down engine strain, reduces wear and repairs.

Dodge *Power Giants* outpower, outperform the "other two" low-priced trucks by wide margin!

Want power? Dodge outpowers its low-priced competitors by as much as 27 percent.

Want economical performance? The advanced design of the Dodge short-stroke V-8 produces the most efficient fuel usage in the industry. You get more miles per gallon . . . full power on *regular gas.*

Want extra payload capacity and handling ease? Dodge has 'em beat on both counts.

How about it? Don't you think you should find out for yourself? Just give your Dodge dealer a ring. He'll bring a truck right to your door and he'll show you certified test results that demonstrate Dodge is a winner in actual tests and on your job.

DODGE

PowerGiants

MOST POWER OF THE LOW-PRICED 3

For more data, circle this page number on card at back →

Give them appetizing sparkle with fast, low-cost Celite filtration

How GOOD does it *taste?* How good does it *look?* It's all the same to the busy supermarket shopper. That's why so many processors of fruit juices, jellies, cooking and salad oils, syrups and other liquid products are now using Celite* diatomite filtration.

Celite removes the finest suspended solids . . . actually *polishes* your products to a dazzling clarity . . . gives them the looks that sell more shoppers. And it does all this with a minimum of trouble and cost . . . providing almost automatic operation at fastest flow rates when used with any standard pressure filter. Of course, Celite never affects the most delicate flavors.

Celite also gives you important advantages over other diatomites. Its lower wet density means greater filter surface coverage and its higher uniformity provides more consistent results. Get the full story from your nearby Celite engineer or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, 565 Lakeshore Road East, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica product

JOHNS MANVILLE PRODUCTS

Johns-Manville CELITE diatomite filter aids

← For more data, circle this page number on card at back

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant | **Civil Service Opportunities** | **Employment Services**
Positions Wanted | **Selling Opportunities Wanted** | **Employment Agencies**
Part Time Work | **Selling Opportunities Offered** | **Labor Bureaus**

DISPLAYED ———**RATES**——— **UNDISPLAYED**

The advertising rate is $18.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$1.50 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS to FOOD ENGINEERING, Class Adv. Box 12, N. Y. 36, N. Y., for August issue closing July 25th.

WHERE TO

- **STORE** Frozen Foods
- **BUY** Ingredients, Equipment, Parts, Services

FOR RATES OR INFORMATION

About Classified Advertising

Contact
The McGraw-Hill Office
Nearest You

ATLANTA, 3
1301 Rhodes-Haverty Bldg.
JAckson 3-6951
R. POWELL

BOSTON, 16
350 Park Square
HUbbard 2-7160

CHICAGO, 11
520 No. Michigan Ave.
MOhawk 4-5800
W. HIGGENS J. BRENNAN

CINCINNATI, 37
1825 Yorktown Rd.
Swifton Village, Apt. 2
REdwood 1-3258
G. MILLER

CLEVELAND, 15
1510 Hanna Bldg.
SUperior 1-7000
W. SULLIVAN

DALLAS, 2
1712 Commerce St.
Vaugh Bldg.
RIverside 7-5117
E. SCHIRMER G. JONES

DETROIT, 26
856 Penobscot Bldg.
WOodward 2-1793
W. STONE

LOS ANGELES, 17
1125 W. 6th St.
MAdison 6-9351
P. CARBERRY D. McMILLAN

NEW YORK, 36
500 Fifth Ave.
OXford 5-5959
S. HENRY D. COSTER R. LAWLESS

PHILADELPHIA, 3
17th & Sansom St.
Rittenhouse 6-0670
R. EDSALL H. BOZARTH

ST. LOUIS, 8
3615 Olive St.
JEfferson 5-4867
W. HIGGENS

SAN FRANCISCO, 4
68 Post St.
DOuglas 2-4600
W. WOOLSTON

We Need An

ASSISTANT PLANT MANAGER

for a Perishable Food Manufacturing Plant

Quality minded, midwestern food producer has an excellent opportunity for a well-trained production executive who has the following qualifications:

- College graduate or the equivalent.
- At least five years supervisory or middle management experience in a perishable food manufacturing business.
- Potential to independently direct plant operations on a profitable basis.
- Between 30 and 40 years of age.
- Willing to locate in a Chicago suburban community.

Send resume of education, experience and salary history

To: P-5470, Food Engineering,
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEER

Nationally known food industry has opening for a mechanical or chemical engineer. Applicant will work on new processes and improvements of existing facilities. Plant located in greater Boston, Massachusetts area. Salary to $8,000. Send Resume to:

P-5471, Food Engineering,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

INDUSTRIAL ENGINEERS
$6000 - $8000

Opportunities in plant layout, material handling, equipment utilization, manufacturing methods and systems, capital improvement projects. Degree in I.E. or M.E. Experienced or recent grads. Multi-plant company. Employer pays our fee and expenses. Send resume and photo to Mr. H. A. Jensen.

WALKER EMPLOYMENT SERVICE
212 So. 7th St. Minneapolis 2, Minnesota

WE NEED

FOOD TECHNOLOGISTS and
FOOD CANNNING CANDIDATES
—junior to top-level

Call, write or wire:
Gladys Hunting (Consultant)
Drake Personnel, Inc.
220 S. State St., Chicago 4, Ill.
HArrison 7-8600

EMPLOYMENT SERVICE

Salaried Personnel, $5,000-$30,000. This confidential service established 1927 is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. F., P. O. Box 674, Manchester, Vermont.

CARROT OIL makes food golden yellow

Carrot oil, like butter, contains carotene. Carrot oil is extracted from carrots, and each pound contains up to 25 million units of carotene, the international standard of vitamin A activity. Carrot oil is preferred for vitaminizing foods because it is a natural vegetable oil and because it contributes vitamin A activity of high stability and desirable golden yellow color. Carrot oil is not synthetic, does not contain animal fats of any kind, and does not produce fishy flavor.

SEND FOR BOOKLET

New 36-page combined catalog on carrot oil for foods, feeds, and pharmaceuticals. Important reading for most food processors. Write today!

NUTRITIONAL RESEARCH ASSOCIATES
205 Broad St., South Whitley, Ind.

QUAKER CITY COLD STORAGE CO., INC.

PHILADELPHIA, PA.
3 WAREHOUSE LOCATIONS
Proper Temperature for Frozen Foods

Just say:

"Information, please"

whenever you need products or services not advertised in a particular issue of this magazine.

Each issue is only part of the complete service we are organized and glad to render to reader and advertiser, alike. We want you to consider this publication your primary source of information in this field.

FOOD ENGINEERING
Classified Advertising
P. O. Box 12, New York 36, N. Y.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

BUSINESS OPPORTUNITIES — **EQUIPMENT - USED or RESALE**

DISPLAYED RATE:

The advertising rate is $13.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATE:

$1.50 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

PROPOSALS, $1.50 a line an insertion.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

Send NEW Ads or Inquiries to Classified Adv. Div. of Food Engineering, P. O. Box 12, N. Y. 36, N. Y., for August issue closing July 25th

LOEB OFFERINGS

Boilers: 15 hp. Eclipse, 60 hp. Sellers, gas.
Cappers: automatic and semi-automatic.
Centrifugals: Fletcher 12" copper, 17" stainless, 20" lithcoated, Tolhurst 26" rubber covered.
Clarifiers: De Laval model 84-51.
Conveyors: screw, 4", 6", stain. steel.
Deodorizer: Rogers 40" stain. steel.
Dryers: Link Belt #30-13, #24-3 MonoTube, monel.
Dryer: Hardinge 3' x 24' hot air.
Dryer: Devine 2 x 4' vac. drum, st. steel.
Dryer: Bowen lab. spray, st. steel.
Dryer: Direct Heat 4' x 20'.
Dryer: Stokes rotary vacuum 2½ x 8'.
Dryer: Nordyke-Marmon 120 bu.
Fillers, liquid: vacuum, siphon, gravity.
Fillers, piston: Stokes, Colton, Elgin, Filler Machine Co. for jars, tubes.
Fillers: M & S for cans 6 and 10 pocket, st. st.
Fillers, powder: Speedee, Triangle, Stokes & Smith, Ferguson, Gump.
Filter Presses: Sperry, Shriver 6"-36", recessed and plate and frames types.
Filters: Int. pressure—Alsop, Sparkler, Lomax, Industrial, Sweetland.
Filter, vacuum: Oliver 2½ x 1'.
Grinder: Enterprise, 7½ hp. motor, 6".
Homogenizers: Manton-Gaulin 25 GPH., 60 GPH., 300 GPH., Flowmaster model 200.
Kettles: Dopp 150 gal., jkt. agitated.
Kettles, Stainless steel: 20 to 300 gal., with and without agitators.
Aluminum 40 to 100 gal.
Labelers: Burt, Knapp, New Jersey, World, Ermold—auto and semi-auto.
Mills, hammer: Mikro, Gump, Prater, Raymond, Jay Bee, Jeffrey, Williams, Fitzpatrick.
Mills, colloid: Charlotte 20 hp., 1 hp.
Mixers, dough type: single and double arm.
Glen Power Plus 340 qt., 5 hp.
Powder: 50 to 2000 lb. capacity.
Gemco 5' x 14', stain. steel.
Portable Electric: ¼ to 5 hp.
Day high speed, 40 hp.
Muller: Simpson 39½" type 316 s.s. bowl.
Pumps: Centrifugal, rotary, gear, vacuum, all types and sizes.
Screens: Selectro 4 x 10', 3 deck.
Sealers: Ferguson, Triangle, Ceco.
Separator: De Laval Nozzle-Matic AC VO.
Sterilizer: American 42" x 52" x 11½' long.
Still, water: Barnstead 75 gal.
Tablet Presses: Single punch and rotary.
Tanks: Stain. steel 25 gal. to 1200 gal.

Tank, stainless steel: 2000 gal. type 316, jacketed, open top.

Send us your inquiries and list of idle equipment

LOEB EQUIPMENT SUPPLY CO.

820 West Superior St. — Chicago 22, Ill.
Telephone Seeley 8-1431 — Our 33rd Year

FOR SALE

All in perfect condition

19 Plate Star Filter Press
#2 M & S Filler with conveyor, gear feed change parts for 12½ oz. Economy Jars
Kyler Boxer for #2 cans
Yale & Towne Syrup Pump
Automatic Taylor Temperature Control Valve
Geyer 8 Pocket Stainless Steel Filler
Continental #10 PDS Closer
Union Heavy duty Bag Sewer
Ingersol Rand 2 H.P. Pump
Standard Knapp Carton Glueing Compression Unit

Write for details and prices.

F. W. HUBER MACHINERY CORP.
461 Broome Street — New York 13, N. Y.

Due to the installation of twist-off capping equipment we offer the following for sale:

One Resina Capper. High Speed. Model LC
One Resina Single Head Capper. Model LC
One Filler Machine, 2 spout piston filler.

All in excellent condition at low prices.

M. POLANER & SON, INC.
233 Morris Avenue
Newark, New Jersey

FOR SALE

C. H. DUTTON OF KALAMAZOO, MICHIGAN PACKAGE BOILER 160 HP, TYPE 3880, SIZE 80, SERIAL NO. 03918, NATIONAL BOARD #12355, MODEL 3880BG, WORKING PRESSURE 125 LBS., COMPLETE WITH UNIFLOW OIL BURNER, SIZE 18, TYPE VDRLH, SERIAL NO. 8415, FOR #6 FUEL OIL COMPLETE WITH PUMPS, IN WORKING ORDER AT PRESENT TIME.

OHIO FRUIT PRODUCTS CO. Inc.
Smedley St. — North East, Pa.

FOR SALE—PUMPS

SANITARY, S.S. HIGH PRESSURE (5000#), with or without variable speed and AUTOMATION for temperature pressure or volume. Excellent for Spray Dryer Applications.

LESTER KEHOE MACHINERY CORP.
1 East 42nd Street — New York 17, N. Y.
MUrray Hill 2-4616

FILTER

Brand new, never used "Niagara" diatomaceous earth filter, 80 sq. ft. area; ship immediately.

FS-5474, Food Engineering,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

FOR SALE

VILTER 7½x7½ AMMONIA COMPRESSOR, factory reconditioned, with motor, starter; located west coast; real bargain.

FS-5476, Food Engineering,
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Hamilton Steam Kettle

250 gallon, Style B, full jacketed stainless steel, serial #21060, brand new in original crate. List $1,690.00. For quick sale $1,150.00. F.O.B. St. Paul, Minnesota.

FS-5308, Food Engineering,
520 N. Michigan Ave., Chicago 11, Ill.

SPECIAL SERVICE

Laboratory Equipment Repair Co., 1810 W. Ogden, Chgo 12, Ill. AO-Beckman-B&L-Coleman-Klett-Leitz.

Rebuild those leaking valves!! Sanitary valves rebuilt for a fraction of the cost of a new valve. Prices submitted on request. Stuart W. Johnson & Co., 611 Main Street, Lake Geneva, Wis.

WANTED

Anything within region that is wanted in the field served by Food Engineering can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

BOILERS

HI-PRESSURE
Complete stock from 10-2,000 h.p.
Nation's largest inventory, New & Used
WABASH POWER EQUIPMENT
31 E. CONGRESS, CHICAGO 5, HA 7-4855

WANTED TO BUY:

2 Piston Elgian Filler Model No. DU 148 or more recent also American Can Co. Pacific Semi-Automatic Vacuum Closing Machine Model 108-A

PINESBRIDGE FARM
10 HARRISON ST., N. Y., N. Y.
WALKER 5-7313

Instrument Repair

Temperature regulators, mercurial indicating thermometers and recording thermometers of all makes repaired.

Complete satisfaction guaranteed.

STUART W. JOHNSON & CO.
611 Main Street, Lake Geneva, Wis.

If there is anything you want that other readers can supply
OR . . . something you don't want— that other readers can use—
Advertise it in the
SEARCHLIGHT SECTION

USED EQUIPMENT FOR SALE!!

USED WOODEN CASES: 24 tall square ½ pints, 20 squat square ½ pints, 20 square pints, 12 square quarts, 6 square ½ gallons, 4 square gallons.

USED WIRE CASES: 30 tall square ½ pints, 12 square quarts, 12 square cream top quarts, 6 square ½ gallons.

USED BOTTLES: 48mm square pints, quarts, 56mm tall square ½ pints, pints and quarts, 8 and 16 ounce jaws with 2-⅝" cap seats.

USED THERMOMETERS: Cold milk Recorder with short bulb,—#1600 chart, Sentinel Recorder with 28" stem, 31" stem and 24" stem Recorders, Foam Heater Thermometers and 28" stem indicating Thermometers.

USED EQUIPMENT: C.P. 26 Filler and Capper, C.B. 24 valve Filler and Capper, C.B. Model 61 Filler and Capper, Meco Foot Operated Can Filler, 4CPM Rotary Can Washer, 200 gallon Receiving Vat, 70 gallon Dump Tank, 24 bottle carver tester, C.B. 200-gallon pasteurizer, Illinois Creamery 200-gallon Pasteurizer, 300-gallon Steriline Pasteurizer, Bagby Model D-1 Cheese Filler, United Metal Seal Auto Cheese Filler, Schlueter Separator Disc Washer, C.B. 36 tube 6-foot Surface Cooler, Damrow 150-gallon Cheese Vat, 3 ton Vilter Pak Ice Storage Bin, Continental Model O Soaker Washer through round or square ½ gallons, C.P. 375# NR Churn, 1 lot used fittings, 1 lot used motors, 1 1000# Toledo scale and weigh can, 72 mm hand capper.

STUART W. JOHNSON & CO.
611 Main St., Lake Geneva, Wis.

FOR SALE

20 & 40 H.P. "Packaged" Boilers.
3200 gal. S.S. Truck Tank & Trailer.
100 to 400 gal. S.S. Mix Tanks, water jkt.
250 gal. Vert. S.S. Tank, insul., agit.
400 gal. Vert. S.S. Tank, 50"x52", water jkt.
500 gal. Vert. S.S. Tank, 50"x64", insul.
500 gal. Horiz. S.S. Tank, 48"x66".
330 gal. Pfaudler G.L. Tank, jkt., agit.
500 gal. Pfaudler G.L. Tank, jkt., T. C. Coil.
3 ft. & 5 ft. Mojonnier S.S. Vacuum Pans.
125 to 1500 gal. Homogenizers or Viscolizers.
Hope Two Plunger Filler, s.s.
50 gal. S.S. Jacketed Kettle, agit.
50 gal. S.S. Premixer (Tank), side agit.
Baltimore Aircoil Water Cooling Tower, 90 G.P.M.
Milk Pasteurizers, Coolers, Fillers, Washers.

Send us your inquiries

LESTER KEHOE MACHINERY CORP.
1 East 42nd St. New York 17, N. Y.
Murray Hill 2-4616

AT&M CENTRIFUGAL

FOR SALE, stainless Centrifugal, 40x24, suspended type, practically new, having been used few weeks only; immediate delivery, inspection invited.

FS-5478, Food Engineering
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

FOR SALE

38" Copper Coating Pans with stem coils
300 gal. Copper Still with condenser and tank
100 qt. 3 speed Read Master Mixer
80 qt. M-80-4 speed Hobart Mixer
100 gal. Copper Steam Jacketed Mixing Kettle
York Freon Compressor with 1½ HP 3 phase motor
Burns Split Nut Peanut Blancher

SAVAGE BROS. CO.
2636 Gladys Ave. Chicago 12, Ill.

WATER FILTERS

2 NIAGARA WATER FILTERS, total area 330 sq. ft. each; capacity 300-400 gph; complete installation, with feeder, pumps, etc. f.o.b. Chicago.

FS-5481, Food Engineering
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

FMC

YOUR FIRST SOURCE FOR RELIABLE FOOD EQUIPMENT

NEW FALCON Ribbon Blenders or Mixers in Mild or Stainless Steel; all sizes
NEW Stainless Steel Steam Jacketed Kettles and Tanks; all sizes
Special Lot of Stainless Clad Kettles; Steam Jacketed; 80 gal. capacity
Copper Kettles up to 250 Gal.; Glass Lined to 3000 Gal.; Aluminum to 80 Gal.
VACUUM PANS: Pfaudler Glass Lined, 500 and 1000 gal., Aluminum or Copper 250 Gal.
Sterlizers 48"x42"x96"; 36"x42"x84"; Ft. Wayne 61"x126"; others
Double Drum Dryers: 32"x72"; 42"x100"; Twin Dryers 42"x120"
Food Machinery Corp. Retorts: Standard 42"x72" Vertical
American Utensil (CRCO) Model "B" Juice Extractor with 5 HP Motor
A. T. Case Stainless Steel S 50 Homogenizer with 15 HP Motor
Marco Stainless Homogenizer Model 400; 10 HP
DICERS by Sterling and Anderson; Rotary Cutters by Abbe, Ball & Jewell, Munson
Sterling and Blakeslee Potato Peelers: Various sizes; Coffee & Meat Grinders
Robinson and Bauer Double Runner Attrition Mills: 24" and 18" with 2 Motors
Hammer Mills, Grinders, Crushers by Williams, Gruendler, Jay Bee, Mikro, etc.
Sprout Waldron 2 Pair High Roller Mill: 9"x18"; Robinson Unique 4 Roll 7"x24"
SIFTERS: Rotex 30"x60"; Patterson Gyro 3 Deck 20"x84"
Robinson Unique S.S. 20"x70"; Ajax Vibratory in S.S. 18"x48"
Robinson Gyro Double Deck 20"x90"; Selectro 18"x48" & 24"x84"
J. H. Day Egg Clipper Mixers: 20"x22"x28" and 32"x32"x25"
Savage Marshmallow Beater: 200 lb. Capacity; arranger for M.D.
FILLER: Stokes & Smith Powder Filler, Semi and Automatic Models
Triangle Electri-Pak 4 Station Conveyor Type Filler
Gump Bar-Num Vibrox Barrell Packers
Berlin Chapman Syruper Type Liquid Filler up to 60 3 Cans
Berlin Chapman Stainless Steel Spout Filler up to No. 10's
Horix Stainless Steel 14 Stem Gravity-Vacuum Fillers up to qts.
Karl Kiefer 2 Stream Vari Visco Filler for Liquids and Semi-Liquids
Karl Kiefer Rotary Vacuum Fillers with 12, 16 and 18 Stations
LABELERS: Can Labelers by Standard Knapp, Burt, Kyler, Nu-Method and others
Bottle Labelers by New Jersey, World, Ermold, Pneumatic Scale, others
Piston Fillers from 1 to 11 Pistons, by Elgin Filler M Co., Bridge, etc.
M. & S. Stainless Steel 10 Pocket Hi Speed Fillers
CAPPERS: Pneumatic Scale 4 Head Automatic Capper; Capem 4 Head Model B2F
Johnson Automatic Wrapper for Frozen Food Packages; adjustable within limits
Standard Knapp Automatic Gluer & Sealer No. 429-600 Series complete
SPECIAL AGITATORS at less than Half Price: Top Entering 5 HP S.S. 240 RPM

The above list represents only the more important units; if you do not see listed the items you need, do not hesitate to send us your inquiry.

SEND US YOUR LIST OF SURPLUS EQUIPMENT

FIRST MACHINERY CORP.

209-289 TENTH STREET, BROOKLYN 15, N. Y.
PARKING ON THE PREMISES
PHONE: STerling 8-4672

FRED FIRSTENBERG *President*

Cable "EFFEMCY"

FOR SALE

2—Model "D" Fitzmills 7½ H.P. motors.
4—Stokes Rotary B-2 and DD-2 Tablet Machines.
2—Stokes "R" Single Punch Tablet Presses.
3—Day #71 Roball Screens, Stainless Steel.
3—Day #31 and #32 Roball Screens.
1—Day 350 gal. Stainless Steel Sigma Blade Mixer.

Complete listings—Bulletin A-39—Write for Copy.

The MACHINERY & EQUIPMENT Corp.
293 Frelinghuysen Ave., Newark 12, N. J.
TAlbot 4-2050

FOR SALE

HASSELBERG AIR COMPRESSOR, with 40 HP, AC motor, capacity 200 CFM at 100 psi., factory rebuilt, ideal for food plant; also 2—A. O. SMITH one-piece, glass-lined tanks, 4200 gal. ea., f.o.b. Cincinnati, Ohio.

FS-5473, Food Engineering,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

JULY SPECIALS

World Twin Turret Labeler.
Resina & Capem Cappers.
Diana Dicer with motor.
Pneumatic Scale Air Cleaner, serial #12161.
250 gal. Glass Jktd. & Agtd. Kettle.
Robinson 29" x 72" Sifter, with motor.
Pneumatic Scale Simplex & Duplex Labelers.
FMC 6 valve S/S can Filler #MA770.
Retorts, horiz. & vert., all makes & sizes.
316 S/S single Drum 3'x5' Dryer, 5 H.P.
S/S Piston Fillers, all makes & sizes.
Wrap Around Labelers, all makes & sizes.
3 Pony Labelers, 86MXX, 86ML & 86MX.
FMC Hand Packed S/S Filler #MH1699.
MRM 12 spout S/S straight line Vac. Filler.

NEW—STEEL & S/S MIXERS, KETTLES & TANKS. Fabricated to Your Specifications. Engineering Advice Available.

WE BUY COMPLETE PLANTS OR SINGLE UNITS. WHAT HAVE YOU FOR SALE?

YOU CAN BANK ON
EQUIPMENT CLEARING HOUSE, INC.
111 33rd Street — Brooklyn, N. Y.
SOuth 8-4451—4452—8782

FOR SALE

2—Sharples #16V Super Centrifuge, St. St. separator bowl.
3—Bird T316 St. St. Continuous Centrifugals 32" x 50", 40" x 60".
2—Pneu. Scale 6 head capper. 53 mm.
2—Filler Machine Co., 4 cyl. St. St. piston fillers.
5—Sparkler #33-S-28 Filters. Steel Body, St. St. plates.
1—Niagara type 316 S. S. Pressure Filter, model 510-28, 500 sq. ft.
2—Flakers, Buffalo 32" x 90".
5—Louisville — 8-Roll 30" Dewatering Presses.
4—Double Drum Dryers: 42" x 100", 32" x 52".
7—Vac. Shelf Dryers: 55 to 356 sq. ft.
1—St. St. Spray Dryers: 19' Dia.
3—Rotary Steam Tube Dryers, 4' x 30'; 6' x 30'; 6' x 40'.
1—Buflovak #6.5 St. St. Double Effect Evaporator, 588 sq. ft.
2—Nickel Evaporators 200 & 450 sq. ft.
1—Stokes Type 316 St. St. Double Effect Evaporator, 250 GPH.
3—Fitzpatrick Comminutors, St. St. models, D. F.
2—125 gal. St. St. Jacketed Kettles, Scraper Agit.
1—55 cu. ft. Spiral Ribbon Mixer.
4—Mixers St. St. Double Arm, 5, 50, 75 gal., Sigma Blade; Jacketed.
1—3000 gal. St. St. Vacuum Tank with coils.
1—3590 gal. Stainless Steel single axle Truck Tank.
30—Stainless Steel Tanks — 30 gal. to 10,000 gal. sizes. NEW & USED.
75—Welded Steel Tanks—Brewery lining.

BOTTLING CANNING MACHINERY PERRY SUPPLIES PROCESSING

PERRY EQUIPMENT CORP.

1411 N. 6th St., Phila. 22, Pa. Phone: STevenson 4-3505

A BRILL BUY
. . . IS THE BEST BUY

SPECIALS

1—Artisan 450 sq. ft. S.S. single effect Evaporator.
1—Nooter 1000 gal. nickel clad, jacketed, agitated Reactor.
2—Pfaudler 500 and 300 gal. glass lined, jacketed, agitated Reactors.
3—3500 gal., 304 S.S. jacketed, agitated Tanks 9' x 7'.
1—Nooter 750 gal. S.S. agitated Tank with steam coils.
5—Bird 32"x50", 316 S.S. Solid Bowl, Continuous Centrifuges.
2—Bird 24"x38x, 18"x28", 304 S.S. Solid Bowl Continuous Centrifuges.
1—NEW Sparkler 14-D-4 Pressure Filter, 304 S.S.
5—Sparkler 33-S-28 Pressure Filters, 304 S.S., 150 sq. ft.
2—Buflovak 42"x120", 42"x90", Double Drum Dryers.
1—Link Belt 5'2" x 20' Steel Roto-Louvre Dryer.
1—Hersey 18" x 12' Hot Air Rotary Dryer, 304 S.S.
1—Sweetland Filters #3, #5, #7, #12.
1—#2DH Mikro Pulverizer.

BE CC BRILL EQUIPMENT COMPANY

2401 Third Ave., New York 51, N. Y.
OR
4101 San Jacinto, Houston 4, Texas

BARGAINS FOR SALE

The Ruderman Machinery Exchange of Gouverneur, N. Y., one of the largest diversified Machinery & Equipment Dealers in America, can furnish you with practically all your needs in Modern Ice Cream, Milk Plant and Electrical Equipment at but a fraction of the original cost.

WRITE—WIRE—PHONE FOR YOUR NEEDS

RUDERMAN MACHINERY EXCHANGE
Gouverneur, New York Telephone: 333-334

FOR SALE

DOUBLE DRUM DRYER—42" dia. x 120" lg. American complete with drive, conveyors, elevator, hood, etc. Built for 125 PSI. Used on milk. Excellent, Reasonable
DOUBLE DRUM DRYER—42" x 100" Buflovac, same specs.
S/S TANKS (1) 1,000 gal. (2) 1,250 gal. Vertical sanitary.
S/S TANKS (2) 4,000 gal. insulated, agitated, used on milk.
S/S EVAPORATOR, Buflovac, 6-5-29-D, 588 sq. ft. complete.
HEAT EXCHANGERS: Four shell and tube type, S/S sanitary, 64 to 150 sq. ft. Used on Milk.
HEAT EXCHANGERS: Two plate type, S/S sanitary Creamery Package and Cherry-Burre'l makes, 31 and 75 plates each. Used on Milk.
S/S VACUUM PANS, 36"; 48"; 72" all sanitary, coil type.
S/S MIXER, J. H. DAY 75 GAL. W. C. double sigma blade type. S/S body with steel jacket.

BEST EQUIPMENT COMPANY
1737 W. Howard Street, Chicago 26, Illinois
AMbassador 2-1452

FOR SALE
New, low prices on
PLUNGER SEALS
For your C.P. and M.G. homogenizer. Send for trial offer. Advise style and capacity of homogenizer.

STUART W. JOHNSON & CO.
611 Main St. Lake Geneva, Wis.

FOR SALE

Please refer to number when inquiring

8. York Plate Heat Exchanger Pasteurizer with Taylor controls—practically new . $4000.
9. 25 BB Waukesha pump, with metal Serial 55282, complete with motor..... 350.
10. 25 BB Waukesha pump; white metal, belt driven, complete with motor..... 75.
19. Toledo Milk Receiving Scale, Suspension type. Complete with stainless steel receiving tank and "Lightin" agitator, 1000# capacity. ..... 750.
26. Niagra Direct Expansion Ammonia type water cooler complete with two pumps for circulating water from pan..... 1200.
33. 90"x32" Buflovac roller milk drier..... 2500.
34. 90"x32" Buflovac roller milk drier..... 2500.
35. 90"x32" Buflovac roller milk drier..... 2500.
(These driers all in good condition and complete with stainless steel stacks up through roof)
36. 42" Majonnier evaporator good condition —complete ..... 3000.
37. 2—Cleaning solution tanks. Good buy. Complete in place cleaning set up. Pumps included. ..... 250.
38. Screw conveyor system for collecting powder from Buflovac Drier. Anyone purchasing three driers above — will throw in this item to complete set up.... 500.
43. 10 H.P. C.P. Ammonia compressor—good 300.
44. 5 H.P. York Self contained ammonia refrigerating unit. ..... 500.
45. 5 H.P. York Self contained ammonia refrigerating unit. ..... $500.
48. Blower Recold unit for refrigerator..... 50.
53. Wickes 125 H.P. water tube boilers, Ray Horizontal Rotary oil burner system, including approx. 50' stack..... 7500.
54. Automatic boiler feed system including hot well tank..... 400.
61. Refrigeration blower unit overhead, Freon for 2 H.P. unit..... 150.
62. Refrigerator blower unit overhead for Freon, 1 H.P. ..... 100.
63. 2 H.P. Freon water cooled refrigerator compressor. ..... 300.
64. 1 H.P. Freon air cooled refrigerator compressor. ..... 150.
65. 96"x42" Buflovac Roller dryer—good condition. ..... 2500.
66. 100" American Roller Dryer, fair condition. ..... 1800.
Both of above complete. Stainless steel stacks going well above roof.
67. King Zero Water cooler — Ammonia — suitable for small sized plant..... 500.
73. Stainless steel tank—New—815/gallon, rectangular. Excellent condition..... 1000.
74. Rebuilt milk tank. Stainless steel lined. 2400/gal. capacity..... 1000.
77. Wickes 125 HP Package A boiler. Water tube. Ray Horizontal oil burner. 65' of 10 gauge smokestack ..... 7500.

Many other pieces of dairy equipment. Please write for list.

Address inquiries to:—A. E. GROTH
DARIGOLD PLANT
P. O. Box 157 Bellingham, Wash.

BUY IT IN THE WEST

★ Lightnin SEV 2500 side entering Agitators ★
Lightnin D-2 portable Agitators, ½ HP (2)
★ Resina single head Capper, 28, 38 mm caps ★
★ Std. Knapp Model F Caser, set for 6 oz cans ★
Std. Knapp Model F Caser, set for #2 cans
★ Sharples DV-2 Centrifuge, with 20 HP motor ★
A T & M 42" Centrifuge, perf. basket, S.S.
★ Delaval Model AAK1 Centrifuge, 7½ HP motor ★
★ Buffalo No. 60 Silent Cutter, Model 30 C ★
Urschel Model B Dicer, with 2 HP motor
★ Niagara Model 510-28 S.S. Filters (2) ★
★ Sweetland #7 Filter, 20 lvs 4" centers ★
Oliver 1' x 1' cont. S.S. Precoat Filter
★ Groen 60 gal Model RA Kettles, S.S. Agit (2) ★
Groen 100 gal Model TA Kettle
Lee 125 gal. Kettle, S.S. jacketed (2)
★ Tyler-Hummer Screens, 3' x 5' single deck (3) ★
Syntron-Spiral Vib. Elevators, 8'6" lift (4)
★ Std. Knapp Labeler, adj. 8 oz to #10 size ★
★ World Labeler, Duplex Straightline, Mod. HS ★
Ferguson Case Gluer, top only, 16' comp.
Charlotte Colloid Mill, Model 20 S.S. 20 HP
★ Glenn Mixer, 340 quart AMF, type 74-21 ★
FMC Peeler, continuous with 5 HP motor
Zenith Pulp Press, with 20 HP Motor
★ Link Belt Roto-Louvre Dryers, 207-10, 310-16 ★
Buflovak Dryer 42" x 90" dou. drum 15 HP
Walker-Wallace Heat Exchanger, S.S. type APV
★ Rietz Disintegrator RDC-9 10 HP, 3600 RPM ★

GOOD USED EQUIPMENT
MACHINERY AND EQUIPMENT COMPANY
GO WEST
514 Bryant Street • San Francisco 7, Calif.

Modern Rebuilt Machinery

UNION Rebuilt Machinery Established 1912

Reduced For Quick Sale

Baker Perkins 50-gal. Steam Jacketed Double Arm Mixers.
Day 12, 20, 50, 75, 100, 150-gal. Double Arm Mixers, Cincinnatus and Imperial.
J. H. Day 50 to 10,000 lb. Steel, Wood and Enamel Powder Mixers.
3500 gallon working capacity Steam Jacketed Double Arm Mixing Tanks.
Triangle Models A2C, N2CA, G2C and N2CA Elec-Tri-Pak Fillers.
S. & S. G1, G2, G4, HG84 Auger Fillers.
Filler, Hope, Elgin S. S. Piston Fillers.
Hayssen, Package Machy. Co. FA, FA4, DF, CA2, Miller, Scandia and Oliver Automatic Cellophane Wrappers.
Hudson Sharp Campbell Automatic Wrappers, Models 2W6, 2W8 and 2W10.
Standard-Knapp No. 429 Carton Sealer.
CRCO Nu-Way, Burt and Knapp Adjustable Wraparound Labelers.
Pony M, ML and TO Labelrites.
Brown PFM Automatic Bag Filling Machine.
Fitzpatrick "D" S.S. Comminuter.
Mikro 4TH, 3TH, 2TH, Bantam Pulverizers.
Stokes DD2 and RBB Tablet Machines.
Colton 2RP, 3RP Rotary Tablet Machines.

Write, Wire, Phone for Details and Prices

TOP PRICES PAID FOR YOUR SURPLUS EQUIPMENT

UNION STANDARD EQUIPMENT CO.

318-322 Lafayette St., New York 12, N. Y.
Phone: Canal 6-5333

SPECIAL OFFERINGS

Modern Packaging Equipment

KARL KIEFER 24 Head Fully Automatic, Stainless Steel Vacuum Fillers.

CAPEM 4 and 3 Head Fully Automatic Cappers.

The above machines are in practically new condition.

PNEUMATIC SCALE COMPANY Cartoning Line, Consisting of: Automatic Feeder, Bottom Sealer, Filler, Top Sealer & Compression Unit.

PNEUMATIC SCALE COMPANY Tightwraps, High Speed.

PNEUMATIC SCALE COMPANY, WORLD and PONY fully automatic and semi-automatic Labelers, 60-120 per minute.

STOKES & SMITH Model D Neverstop.

STOKES & SMITH Model H.G. 84, G, and GD Auger Fillers.

STOKESWRAP Model A with electric eye, counter, stainless steel auger filler.

PACKAGE MACHINERY CO Model FA FA2 Wrappers.

Partial List—send for complete list of equipment in stock.

JUST RECEIVED

Pneumatic Scale Company
120 Per Minute Bottling Line
consisting of Bottle Cleaner, Stainless Steel Filler, 4 Head Rotary Capper and Duplex Labeler. Above unit Five years old.

ALLIED EQUIPMENT CO.
940-946 Nepperhan Ave., Yonkers 3, N. Y.
Phone: Yonkers 5-0442

ADVERTISERS IN THIS ISSUE

ALGIN CORP. OF AMERICA 144
Agency—Gehnrich Assoc.
ALLEGHENY LUDLUM STEEL CORP. 204
Agency—W. S. Walker Adv., Inc.
ALLIED CHEMICAL & DYE CORP. GENERAL CHEMICAL DIV. 127
Agency—Atherton & Currier, Inc., Adv.
NATIONAL ANILINE DIV. 35
Agency—James J. McMahon Inc.
ALLIS CO., THE LOUIS 189
Agency—Hoffman & York, Inc. Adv.
AMERICAN CAN CO. 109
Agency—Compton Adv.
AMERICAN SPICE TRADE ASSOCIATION TL194
Agency—Bernard L. Lewis Adv.
AMES IRON WORKS, INC. 123
Agency—Melvin F. Hall Adv. Agcy., Inc.
ARMSTRONG CORK CO. 47
Agency—Batten, Barton, Durstine & Osborn, Inc.
ASHWORTH BROS., INC. TR133
Agency—Welch, Collins & Mirable, Inc.
ATLAS MINERAL PRODUCTS CO. 42
Agency—Harry Rollinson, Jr. Adv.

BAKER-RAULANG CO., THE 118
Agency—G. M. Basford Co.
BALDWIN-LIMA-HAMILTON CORP. HAMILTON DIV. 117
Agency—Gray & Rogers
BALTIMORE SPICE CO., THE 183
Agency—Strouse & Co.
BAUSCH & LOMB OPTICAL CO. 4
Agency—Ed Wolff & Assoc. Adv.
BOWSER, INC. R148
Agency—Willis S. Martin Co., Inc.
BOYERTOWN AUTO BODY WORKS, INC. 137
Agency—The Jay J. Dugan Agcy.
BRIGHTON CORP. HAMILTON COPPER & BRASS WORKS 170
Agency—Farson, Huff & Northlich
BROCKWAY GLASS CO., INC. 97
Agency—Smith, Taylor & Jenkins, Inc.
BURT CO., F. L. BL194
Agency—Norton M. Jacobs Adv.

CAMBRIDGE WIRE CLOTH CO., THE 8
Agency—Emery Adv. Corp.
CARRIER CORP. 80
Agency—N. W. Ayer & Son, Inc.
CHERRY-BURRELL CORP. 164
Agency—The Buchen Co.
CHRYSLER CORP., DODGE TRUCKS 195
Agency—Ross Roy, Inc.
CLARK EQUIPMENT CO. 76
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.
CLAYTON MFG. CO 43
Agency—The McCarty Co.
CLINTON CORN PROCESSING CO. 176
Agency—L. W. Ramsey Adv.
COLORADO FUEL AND IRON CORP. WICKWIRE SPENCER STEEL DIV. 156
Agency—Doyle, Kitchen & McCormick, Inc.
CONTINENTAL CAN CO. 120
Agency—Batten, Barton, Durstine & Osborn, Inc.
COOPER ALLOY CORP. 36
Agency—St. Georges & Keyes, Inc.
CORN PRODUCTS SALES CO 44
Agency—C. L. Miller Co., Inc.
CRANE CO. 54
Agency—The Buchen Co.
CROWN CORK & SEAL CO., INC. 103
Agency—The Aitkin-Kynett Co.
CROWN ZELLERBACH CORP. WESTERN-WAXIDE SPECIALTY PKG. DIV. 119
Agency—Merchandising Factors Inc.
CRUCIBLE STEEL COMPANY OF AMERICA 52
TRENT TUBE CO. 167
Agency—G. M. Basford Co.
CUNO ENGINEERING CORP. 166
Agency—Hugh H. Graham & Assoc., Inc.

DAY CO., THE J. H. 130
Agency—Strauchen & McKim
DCA FOOD INDUSTRIES, INC. 185
Agency—Atlantic Adv. Co.
DEMING CO., THE 11
Agency—G. M. Basford Co.
DODGE & OLCOTT, INC. 142
Agency—Caleon Adv. Corp.
DOW CHEMICAL CO., THE 79, 139
Agency—MacManus, John & Adams, Inc.
DOW CORNING CORP 49
Agency—Church & Guisewite Adv., Inc.
du PONT de NEMOURS & CO., (INC.), E. I. POLYCHEMICALS DEPT. 93
Agency—Batten, Barton, Durstine & Osborn, Inc.
DUSTEX CORP. TR151
Agency—Comstock & Co., Adv.

EASTMAN KODAK CO. DISTILLATION PRODUCTS IND. 83
Agency—Rumrill Co., Inc.
EKCO-ALCOA CONTAINERS, INC. 94
Agency—Marvin Gordon & Assoc., Inc.
EXACT WEIGHT SCALE CO., THE 111
Agency—Byer & Bowman, Inc.

FAIRBANKS, MORSE & CO. 84
Agency—The Buchen Co.
FERGUSON CO., J. L. 114
Agency—Kenneth B. Butler & Assoc.
FIRMENICH INC. 153
Agency—Calkins & Holden, Inc.
FOOD MACHINERY & CHEMICAL CORP. CANNING MACHINERY DIV. 9
Agency—The McCarty Co.

Turn to page 202

PUBLICATION HEADQUARTERS: 330 W. 42nd St., N.Y. 36, N.Y.

G. E. Riddell — Adv. Sales Mgr.
E. C. Saint — Promotion & Research Mgr.
J. Tsivgoulis — Business Mgr.
R. A. Gran — Advertising Makeup

SALES REPRESENTATIVES

ATLANTA 3, 1301 Rhodes-Haverty Bldg. — Robert H. Powell, Jr.
BOSTON 16, 350 Park Square Bldg. — Paul T. Fegley
CHICAGO 11, 520 N. Michigan Ave. — Lockwood B. Seegar, Harvey W. Wernecke
CLEVELAND 15, 1510 Hanna Bldg. — Tom E. Taylor
DALLAS 1, 1712 Commerce St. — Edward E. Schirmer
DENVER 2, 1740 Broadway — William C. Woolston
DETROIT 26, 856 Penobscot Bldg. — Lockwood B. Seegar, Tom E. Taylor
LOS ANGELES 17, 1125 West 6th Street — John B. Uphoff
NEW YORK 36, 500 Fifth Avenue — Paul T. Fegley, Frank W. McCarthy
PHILADELPHIA 3, Architects Bldg. — Edward A. Martin
PITTSBURGH 22, 1111 Oliver Bldg. — Edward A. Martin
SAN FRANCISCO 4, 68 Post St. — William C. Woolston
ST. LOUIS 8, Continental Bldg. — Lockwood B. Seegar
LONDON E. C. 4, ENGLAND, 95 Farringdon Street — H. Lagler

ADVERTISERS IN THIS ISSUE

Continued from page 201

FOXBORO CO., THE 128
Agency—Noyes & Co.
FRICK CO. BR133
Agency—Waynesboro Adv.
FRITZSCHE BROTHERS, INC. 16
Agency—Caleon Adv. Corp.
FULLER CO. 51
Agency—The O. S. Tyson & Co., Inc.

GARDNER-DENVER CO. 163
Agency—The Buchen Co.
GAYLORD CONTAINER CORP. DIV. OF CROWN ZELLERBACH CORP. 23
Agency—Oakleigh R. French & Assoc., Inc.
GENERAL AMERICAN TRANSPORTATION CORP. TANK CAR 6
Agency—Edward H. Weiss and Co.
GENTRY INC. 191
Agency—Julian Besel & Assoc.
GOODRICH INDUSTRIAL PRODUCTS CO., B. F. 72
Agency—The Griswold-Eshleman Co.
GOODYEAR TIRE & RUBBER CO., THE INDUSTRIAL PRODUCTS DIV. 25
Agency—Kudner Agency, Inc.
GOTTSCHO, INC., ADOLPH BR129
Agency—David E. Rothschild Adv.

HOERNER BOXES, INC. 108
Agency—W. D. Lyon Co., Inc.
HOFFMANN-LA ROCHE, INC. 187, 188
Agency—Fred Gardner Co., Inc.
HUBINGER CO., THE 124
Agency—N. A. Winter Adv. Agcy.

INGERSOLL-RAND 28
Agency—Beaumont, Heller & Sperling Co., Inc.
INGERSOLL-RAND 172
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.
INTERNATIONAL SALT CO., INC. 175
Agency—Batten, Barton, Durstine & Osborn, Inc.

JAMISON COLD STORAGE DOOR CO 131
Agency—Beaumont, Heller & Sperling, Inc.
JENKINS BROS. 140
Agency—Darrell Prutzman Assoc.
JOHNS-MANVILLE CELITE FILTER AIDS 196
Agency—J. Walter Thompson Co.

KELCO CO. 12
Agency—Cayton, Inc. Adv.
KING CO. OF OWATONNA, THE 186
Agency—Jaffe, Naughton, Rich, Adv.
KLENZADE PRODUCTS, INC. L148
Agency—W. H. Badke Adv.

LABELETTE CO. 179
LADISH CO., TRI-CLOVER DIV. 48
Agency—Russell T. Gray, Inc.
LA PORTE MAT & MFG. CO. TR129
Agency—Charles Elwyn Hayes Adv.
LINK-BELT CO. 37
Agency—Klau-Van Pietersom-Dunlap Assoc., Inc.

MASTER ELECTRIC CO., THE 146
Agency—Kircher, Helton & Collett, Inc.
MASTER MECHANICS CO., THE 154
Agency—Lang, Fisher & Strashower, Inc.
MERCOID CORP., THE 41
MINNEAPOLIS-HONEYWELL REGULATOR CO. INDUSTRIAL DIV. 32
Agency—The Aitkin-Kynett Co.
MONARCH MFG. WKS., INC. 169
Agency—J. Cunningham Cox, Inc.
MORTON SALT CO. 135
Agency—Needham, Louis & Brorby, Inc.
MOTIOGRAPH, INC. 190
Agency—The Richard Morton Co.

NASH ENGINEERING CO. 150
NATIONAL STARCH PRODUCTS INC. 168
Agency—G. M. Basford Co.
NIAGARA BLOWER CO. 203
Agency—Moss-Chase Co.
NORDA, INC. ..... Third Cover
Agency—Fred Gardner Co., Inc.
NUTRITIONAL RESEARCH ASSOCIATES 197
Agency—Harris & Bond Inc.

OAKITE PRODUCTS, INC. 134
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.

PACIFIC LUMBER CO., THE 171
Agency—The McCarty Co.
PACKAGE MACHINERY CO. 90
Agency—Fuller & Smith & Ross, Inc.
PALMER THERMOMETERS, INC. 22
Agency—The Bohnett Co.
PFAUDLER CO., THE 77
Agency—Rumrill Co., Inc.
PFIZER & CO., INC., CHAS. 149
Agency—MacManus, John & Adams, Inc.
PNEUMATIC SCALE CORP., LTD. 116
Agency—H. B. Humphrey, Alley & Richards, Inc.
POLAK & SCHWARTZ, INC. TL180
Agency—Schank Adv. Inc.
POWELL VALVES 13
Agency—The Ralph H. Jones Co.
PROCTOR & SCHWARTZ, INC. 24
Agency—Robert S. Kampmann, Jr. Adv.

QUAKER CITY COLD STORAGE CO., INC. 197

RICHARDSON SCALE CO. 50
Agency—O. S. Tyson & Co., Inc.
RIEGEL PAPER CORP. 21
Agency—W. L. Towne Co.
RYERSON & SON, INC., JOSEPH T. BR134
Agency—Calkins & Holden, Inc.

SARCO CO., INC. 160
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.
SHARPLES CORP., THE 174
Agency—Renner Adv.
SHELL CHEMICAL CORP. 115
Agency—J. Walter Thompson Co.
SIGMAMOTOR, INC. TL184
Agency—Melvin F. Hall Adv. Agcy. Inc.
SPRAYING SYSTEMS CO. BL180
Agency—Advertising Producers-Assoc., Inc.
SPROUT, WALDRON & CO., INC. 138, BR186
Agency—Stephen Goerl Assoc., Inc.
ST. REGIS PAPER CO., CHESLAM DIV. 101
Agency—Lloyd S. Howard Assoc., Inc.
STALEY MFG. CO., A. E. 178
Agency—Ruthrauff & Ryan, Inc. Adv.
STANDARD CONVEYOR CO. 82
Agency—Klau-Van Pietersom-Dunlap, Inc.
STANDARD OIL CO. (INDIANA) 10
Agency—D'Arcy Adv. Co.
STERWIN CHEMICALS INC. VITAMINS DIV. ..... Second Cover
Agency—The Thompson-Koch Co., Inc.
STEPEHNS-ADAMSON MFG. CO. 30-31
Agency—Connor Assoc., Inc. Adv.
STEWART-WARNER CORP. 136
Agency—MacFarland, Aveyard & Co., Adv.
STOKES & SMITH CO. 104
Agency—The McCarty Co.
STRAHMAN VALVES, INC. BR194
Agency—Picard & Marvin, Inc.
STRASBAUGH, R. HOWARD BL184
STRONG-SCOTT MFG. CO., THE 181
Agency—Savage-Lewis, Inc.
STURTEVANT MILL CO. 177
Agency—F. P. Walther, Jr. & Assoc., Inc.

PROFESSIONAL SERVICES

FOOD DEVELOPMENT LABORATORY
S. W. ARENBON, *Director*
Ingredient evaluations • New Products development. Specializing in flour shortenings, milk and other basic ingredients • Facilities; chemicals and physical laboratory, bakery, spray dryer and other unit process equipment.
2365 W. Franklin St. Baltimore 23, Md. — 440 W. 34th St. New York, N. Y.

GEMAR ASSOCIATES
CONSULTING
MATERIALS HANDLING
ENGINEERS
over 25 years experience
GREENWICH, CONNECTICUT

LEWIN ASSOCIATES
Consultants
PLANT DESIGN AND LAYOUT—PROCESSING EQUIPMENT—PRODUCT AND PACKAGE DEVELOPMENT AND IMPROVEMENT — WAREHOUSING — DISTRIBUTION — MARKETING RESEARCH — ESTIMATES — REPORTS
243 West 56 Street, New York 19, N. Y. JUdson 6-1748-9

GUSTAVE T. REICH & ASSOCIATES
Consultant to the Food Industries
COMPLETE CONTINUOUS PROCESSES.
Operation — Waste Disposal
AUTOMATION
1422 Chestnut St. Philadelphia 2, Pa.

SCHWARZ LABORATORIES Inc.
Consultation on Food Problems
Analyses of Foods and Beverages
Food Plant Design and Process Improvement
Research and Investigations
Legal Testimony
Write for bulletin describing facilities and services
230 Washington St., Mount Vernon, N. Y.

FOSTER D. SNELL
Research Laboratories
SENSORY PANEL TESTS
Food Analysis, Stability Studies, Evaluations, Packaging Problems, Vitamin Assays.
Write For "Food Facts"
29 W. 15th St., N. Y. 11 — WAtkins 4-8800

STRASBURGER & SIEGEL
Chemists—Bacteriologists—Food Technologists
Specialists in Canned and Glassed Foods
Laboratory Services
Testing Tomato Products, Mayonnaise, Pickles, Oils, Fats, Beverages, Sugars, Filth in Foods
Food and Drug Libels, Expert Testimony
1403 Eutaw Place — Baltimore 17, Maryland

LABORATORY SERVICES
for the FOOD, FEED, DRUG and CHEMICAL INDUSTRIES
Analyses, Biological Evaluation, Toxicity Studies, Insecticide Testing and Screening, Flavor Evaluation.
PROJECT RESEARCH and CONSULTATION
Write for Price Schedule
WISCONSIN ALUMNI RESEARCH FOUNDATION
P. O. Box 2217 — Madison 1, Wisconsin

ADVERTISERS IN THIS ISSUE

SUNKIST GROWERS 26
Agency—Foote, Cone & Belding
SUPERIOR SEPARATOR CO. 27
Agency—Savage-Lewis, Inc.
SURFACE COMBUSTION CORP. 14-15
Agency—Odiorne Industrial Adv.
SUTTON, STEELE & STEELE, INC. 173
Agency—Duvall Williams Adv.

THERMO KING CORP. 29
Agency—Bozell & Jacobs, Inc.
TOLEDO SCALE CO. 98
Agency—Beeson-Reichert, Inc.

UNITED STATES GASKET CO.
PLASTICS DIV. OF THE GARLOCK
PACKING CO. 46
Agency—The Michener Co. Adv.
UNITED STATES PLYWOOD CORP. 71
Agency—Kenyon & Eckhardt, Inc. Adv.
UNITED STATES RUBBER CO.
MECHANICAL GOODS DIV. 38
Agency—Fletcher D. Richards, Inc.
UNITED STATES STEEL CORP.
CYCLONE FENCE DEPT. BR151
Agency—Batten, Barton, Durstine & Osborn, Inc.
U. S. STONEWARE CO., THE 132
Agency—Ralph Gross Adv., Inc.

VAN AMERINGEN-HAEBLER, INC. ..... Fourth Cover
Agency—Oliver-Beckman Inc.

WALLACE & TIERNAN, INC. 45
Agency—Branstater Assoc., Inc.
WALWORTH CO. 182
Agency—G. M. Basford Co.
WAUKESHA FOUNDRY CO. 141
Agency—Morrison-Greene-Seymour, Inc.
WAXED PAPER MERCHANDISING COUNCIL, INC. 110
Agency—Ruthrauff & Ryan, Inc.
WEST DISINFECTING CO. 145
Agency—G. M. Basford Co.
WESTON ELECTRICAL INSTRUMENT CORP. 193
Agency—G. M. Basford Co.

YARNALL-WARING CO. 147
Agency—The Michener Co. Adv.

CLASSIFIED

F. J. Eberle, Business Mgr.

EMPLOYMENT OPPORTUNITIES 197

SPECIAL SERVICES 198
Repairing 198

EQUIPMENT
(Used or Surplus New)
For Sale 198-201

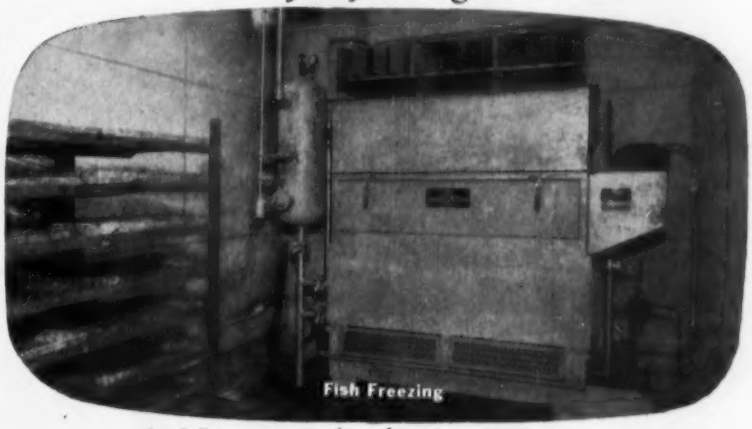
ADVERTISERS INDEX

Allied Equipment Co. 201
Best Equipment Co., Inc. 200
Brill Equipment Co. 200
Drake Personnel, Inc. 197
Equipment Clearing House, Inc. 199
First Machinery Corp. 199
Groth, A. E. 200
Huber Machinery Corp., F. W. 198
Johnson & Co., Stuart W. 198, 199, 200
Kehoe Machinery Corp., Lester 198
Loeb Equipment Supply Co. 198
Machinery & Equipment Corp.—Newark 199
Machinery & Equipment Co., Inc., (Calif.) 200
Ohio Fruit Products Co., Inc. 198
Perry Equipment Corp. 200
Pinesbridge Farm 198
Polaner & Sons, M. 198
Ruderman Machinery Exchange 200
Savage Brothers, Inc. 199
Union Standard Equipment Co. 201
Wabash Power Equipment Co. 198
Walker Employment Service 197

NIAGARA "NO FROST"

25 Years' Successful Experience

★ *Never any defrosting shutdown*

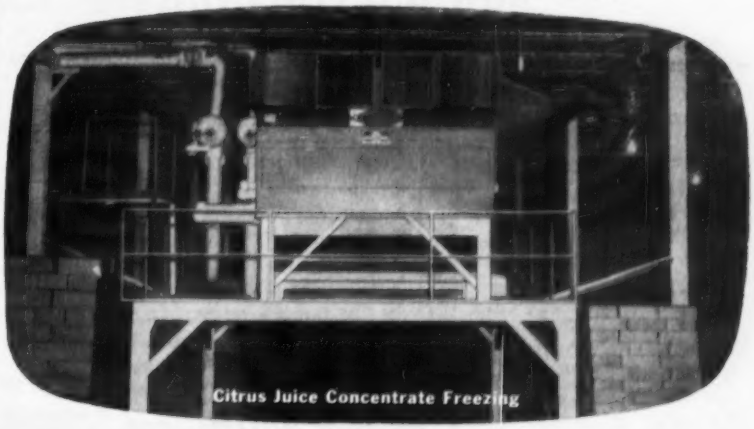


Fish Freezing

★ *Never a rise in temperature*

Vegetable Freezing

★ *Save Power... Reduce Costs*



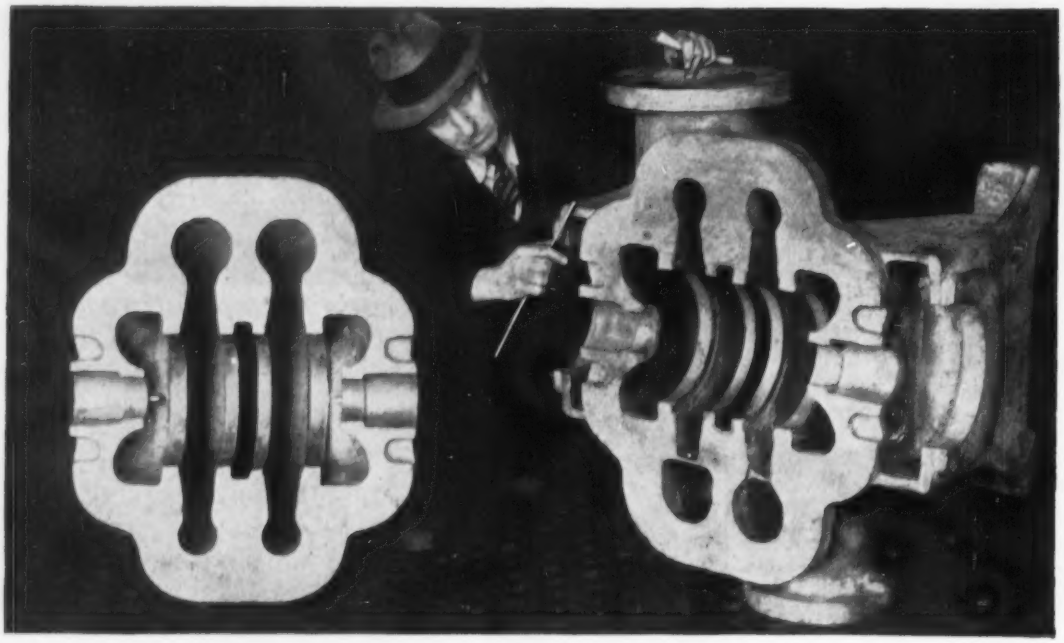
Citrus Juice Concentrate Freezing

Write for Niagara Bulletin 105

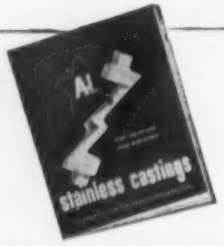
NIAGARA BLOWER COMPANY

Dept. FE-7, 405 Lexington Ave. New York 17, N. Y.

District Engineers in Principal Cities of U. S. and Canada



There's NO problem in Stainless Castings that we can't answer for you—



Write for this book on A-L STAINLESS STEEL CASTINGS

28 pages of valuable and complete data on stainless castings: analyses, properties, technical data on handling and heat treatment, typical applications, how to order, etc.

ADDRESS DEPT. FE-91

Odd shapes or intricate sections are certainly no problem—look at some of our stainless steel casting products illustrated above. We could show you hundreds more. And size is no consideration, either—we're equipped to handle any stainless castings—from a few ounces to thousands of pounds.

The really important point for you to consider is not the matter of shape or size, but of *experience*. The A-L Buffalo Foundry is a group of specialists in high-alloy steel castings *exclusively* . . . pioneers in both the static and vertical-centrifugal methods of casting stainless steels.

For your assurance, there's a long record of years of successfully answering difficult service conditions with sound, clean-grained Allegheny stainless castings—free from defects, easy to machine and dependable in supply.

● Let us quote on *your* stainless casting requirements . . . any size, any shape. ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.***

Make it BETTER—and LONGER LASTING—with

Allegheny Stainless

AL ALLEGHENY LUDLUM ®

Warehouse stocks carried by all Ryerson steel plants

As you read this issue, circle page numbers on card for more information

READER SERVICE

For Food-Plant Employees and Consultants Only

The user of FOOD ENGINEERING reader-service post cards benefits from the fact that this publication carries more advertisements and more editorial items on new food-plant equipment, supplies, and services than any other industry-wide food publication in the world.

If you wish to enter subscription

Use this form. We'll bill you later. →

IMPORTANT—FOR PAGES SHOWING MORE THAN ONE ADVERTISED ITEM, USE THIS GUIDE TO NUMBERS ON CARD

4 All items shown
- 4a Abbe-3L
- 4b Industrial
- 4c Butyro
- 4d Precision
- 4e Dipping
- 4f Juice
- 4g Hand
- 4h Oil grading

13 All items shown
- 13a Globe valve
- 13b Tank valve
- 13c SS gate valve
- 13d SS swing check valve

24 All items shown
- 24a Plate freezer
- 24b Spray dryer
- 24c Drying range

45a Scale feeder

45b Chlorinators

77 All items shown
- 77a Superjector
- 77b Heat exchangers
- 77c Tanks
- 77d Dryers
- 77e Fillers
- 77f Evaporators

98 All items shown
- 98a Testers
- 98b Liquid fillers
- 98c Bulk weighers
- 98d Electronic weighing
- 98e Control weighing

114 All items shown
- 114a Case loaders
- 114b Case loaders
- 114c Case sealers
- 114d Imprinters

129a Conveyor belts

129b Bul. RIN-5

133a Cat. E55

133b Refrigeration

134a Saniseptor

134b Steel

148 All items shown
- 148a "CBS" cleaner
- 148b Steam cleaner
- 148c Flash-Klenz
- 148d Klenzode XY-12
- 148e Blenders

151a Microclone

151b Conveyor belts

170 All items shown
- 170a Style SA kettle
- 170b Style CW kettle
- 170c Style PC kettle
- 170d Style VT kettle
- 170e Style SB kettle
- 170f Style SA mix cooker
- 170g Style CW mix cooker
- 170h Style HV mix cooker
- 170i Circulator
- 170j Style A kettle

180a Flavors

180b Spray nozzles Cat. 24

184a Pumps

184b Cheese cutters

186a Freeze systems

186b Bul. 160

194a Spices

194b Model T filler

194c Spray nozzles

If you wish to enter subscription

Use this form. We'll bill you later. →

July, 1957 — Card expires, October, 1957

CIRCLE PAGE NUMBERS BELOW, FILL IN OTHER SIDE, MAIL

ADVERTISEMENTS

For pages showing more than one advertised item, use guide below left.

2	13c	36	77	98c	119	139	154	170j	186b
4	13d	37	77a	98d	120	140	156	171	187
4a	14-8	38	77b	98e	123	141	160	172	188
4b	16	41	77c	101	124	142	163	173	189
4c	21	42	77d	103	127	144	164	174	190
4d	22	43	77e	104	128	145	166	175	191
4e	23	44	77f	108	129a	146	167	176	193
4f	24	45a	79	109	129b	147	168	177	194a
4g	24a	45b	80	110	130	148	169	178	194b
4h	24b	46	82	111	131	148a	170	179	194c
6	24c	47	83	114	132	148b	170a	180a	195
8	25	48	84	114a	133a	148c	170b	180b	196
9	26	49	90	114b	133b	148d	170c	181	203
10	27	50-1	93	114c	134a	148e	170d	182	204
11	28	52	94	114d	134b	149	170e	183	205
12	29	54	97	115	135	150	170f	184a	206
13	30-1	71	98	116	136	151a	170g	184b	
13a	32	72	98a	117	137	151b	170h	185	
13b	35	76	98b	118	138	153	170i	186a	

EDITORIALS

These numbers correspond to numbers in text.

22A	161B	169A	170E	176G	179E	180A	180L	183F	184B	184M
22B	161C	169B	170F	176H	179F	180B	180M	183G	184C	184N
22C	162A	169C	173A	176I	179G	180C	180N	183H	184D	184O
22D	162B	169D	173B	176J	179H	180D	180O	183I	184E	186A
24A	162C	169E	173C	176K	179I	180E	180P	183J	184F	186B
27A	165A	169F	176A	176L	179J	180F	180Q	183K	184G	186C
27B	165B	169G	176B	176M	179K	180G	183A	183L	184H	186D
28A	165C	169H	176C	179A	179L	180H	183B	183M	184I	186E
158A	166A	170A	176D	179B	179M	180I	183C	183N	184J	186F
158B	166B	170B	176E	179C	179N	180J	183D	183O	184K	186G
159A	166C	170C	176F	179D	179O	180K	183E	184A	184L	
161A	166D	170D								

☐ 1 yr. $2 ☐ 2 yrs. $3 ☐ 3 yrs. $4

Domestic rates only, for others, see p. 5

Product or Service .....

No. Employees In Your Plant .....

July, 1957 — Card expires, October, 1957

CIRCLE PAGE NUMBERS BELOW, FILL IN OTHER SIDE, MAIL

ADVERTISEMENTS

For pages showing more than one advertised item, use guide at left.

2	13c	36	77	98c	119	139	154	170j	186b
4	13d	37	77a	98d	120	140	156	171	187
4a	14-5	38	77b	98e	123	141	160	172	188
4b	16	41	77c	101	124	142	163	173	189
4c	21	42	77d	103	127	144	164	174	190
4d	22	43	77e	104	128	145	166	175	191
4e	23	44	77f	108	129a	146	167	176	193
4f	24	45a	79	109	129b	147	168	177	194a
4g	24a	45b	80	110	130	148	169	178	194b
4h	24b	46	82	111	131	148a	170	179	194c
6	24c	47	83	114	132	148b	170a	180a	195
8	25	48	84	114a	133a	148c	170b	180b	196
9	26	49	90	114b	133b	148d	170c	181	203
10	27	50-1	93	114c	134a	148e	170d	182	204
11	28	52	94	114d	134b	149	170e	183	205
12	29	54	97	115	135	150	170f	184a	206
13	30-1	71	98	116	136	151a	170g	184b	
13a	32	72	98a	117	137	151b	170h	185	
13b	35	76	98b	118	138	153	170i	186a	

EDITORIALS

These numbers correspond to numbers in text.

22A	161B	169A	170E	176G	179E	180A	180L	183F	184B	184M
22B	161C	169B	170F	176H	179F	180B	180M	183G	184C	184N
22C	162A	169C	173A	176I	179G	180C	180N	183H	184D	184O
22D	162B	169D	173B	176J	179H	180D	180O	183I	184E	186A
24A	162C	169E	173C	176K	179I	180E	180P	183J	184F	186B
27A	165A	169F	176A	176L	179J	180F	180Q	183K	184G	186C
27B	165B	169G	176B	176M	179K	180G	183A	183L	184H	186D
28A	165C	169H	176C	179A	179L	180H	183B	183M	184I	186E
158A	166A	170A	176D	179B	179M	180I	183C	183N	184J	186F
158B	166B	170B	176E	179C	179N	180J	183D	183O	184K	186G
159A	166C	170C	176F	179D	179O	180K	183E	184A	184L	
161A	166D	170D								

☐ 1 yr. $2 ☐ 2 yrs. $3 ☐ 3 yrs. $4

Domestic rates only, for others, see p. 5

Product or Service .....

No. Employees In Your Plant .....

MAIL CARDS FOR MORE INFORMATION

Equipment & Supplies Literature Offered:

Air-cond. equip. 14-5
Fillers 176
Ventilators 176

Boxes 22, 108

Buildings, steel 170

Compressors ..150, 163, 176

Containers..24, 94, 103, 109
Boxes..22, 23, 27, 28, 108
Glass 22, 97

Controls..128, 166, 180, 183
Electronic 98
Flow 183
Moisture 165
Pressure 41
Recording 183
Refractometers 4
Temperature..22, 32, 160
164, 174, 183, 193
Thermal 190
Weight 98, 111, 116

Conveyor equip. 30-1, 82, 183
Belts..8, 23, 72, 129, 133
151, 156

Pneumatic 50-1
Screw 37

Generators, steam 43, 123

Ingredients 26, 168, 176
184, 191

Antioxidants 184
Colloids 12, 144
Colors 2, 35, 184
Defoamers 49
Flavors..16, 139, 142, 183
169, 180, 205, 206
Monoglycerides 83
Propylene Glycol 79
Salt 135, 175
Sorbic acid 149
Spices 104
Syrups 44, 124, 178
Vitamins 187, 188

Air-cond. equip. 184, 186
Fillers 176
Ventilators 176

Materials handling..183, 184
Pallets 183

Management 184, 186

Metals
Steel 52, 184, 170

Motors 146, 189

Nozzles, spray 147, 169
180, 194

Packaging Equipment..90, 104
Baggers 180
Blister packager 169
Can closers 165
Can makers 117
Cappers 162
Case formers 162
Case loaders 114
Case sealers 114
Fillers 77, 98, 169
180, 191

Imprinters..114, 129, 170
Labelers 179
Packers 180
Printers 180
Variety packager 170
Viscous material 162

Packaging material..179, 180
Boxes 23, 108
Cans 22, 120
Cartons 22, 27, 28
Containers ..24, 94, 103
109

Foil bags 27
Glass 22, 97
Impregnated 115
Laminates 101
Paper 21, 110, 119
Plastic 176
Polyethylene 93
Tubes 180

Pipe & Tubing....167, 176
Brazing rings 179
Faucets 176
Plastic....132, 166, 170
Rubber pipes 38
Stainless 176
Titanium 179

Insulation 47
Cork 131
Doors 71
Plywood 171
Wood fibre 171

Grinders 183
Heat exchangers 77
Kettles 170
Mixers 181
Pan greasers 173
Pie makers 170
Plate freezers 24
Purifiers 179
Shakers 186
Spray dryers 24
Tanks 77

Pumps 11, 28, 48, 141
166, 179, 184
Centrifugal 172
Peripheral 84

R. R. cars, tank 6

Refrigeration 80, 133
Freezers 186, 203
Refrigerants 127
Trucks 29

Salt 135, 175

Sanitation 148
Chlorinators 45
Cleaners 134
Detergents 145, 148
Incinerators 179
Steam cleaner 148

Separation equip. 173
Filter aids 166, 196
Screens 161
Sifters 138

Sifting
Wood fibre 161

Surfacing material ..46, 166
176, 179

Coatings 169
Floors 42, 179
Paint 179
Tile 154

Transmission equip..159, 170
Rubber pipes 158
Couplings 158

Transportation 186

Trucks
Bodies 137
Commercial..165, 186, 195
Industrial ..76, 118, 183
Trailers 161, 169
173, 186

Two-way radio 173

Valves 13, 36, 140, 158
176, 182

Diaphragm 179
Plug 54

PLEASE TYPE OR PRINT—GIVE COMPLETE INFORMATION

Name .....

Position ..... Product .....

Company .....

Street .....

City ..... State .....

FIRST CLASS
(Sec. 34.9 P.L.&R.)
PERMIT No. 64
NEW YORK, N. Y.

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

4¢ POSTAGE WILL BE PAID BY—

FOOD ENGINEERING
READER SERVICE DEPARTMENT
330 WEST 42nd ST.
NEW YORK 36, N. Y.

PLEASE TYPE OR PRINT—GIVE COMPLETE INFORMATION

Name .....

Position ..... Product .....

Company .....

Street .....

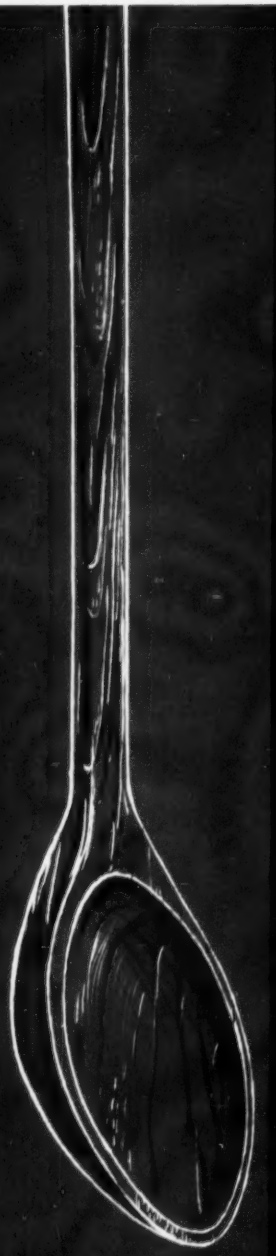
City ..... State .....

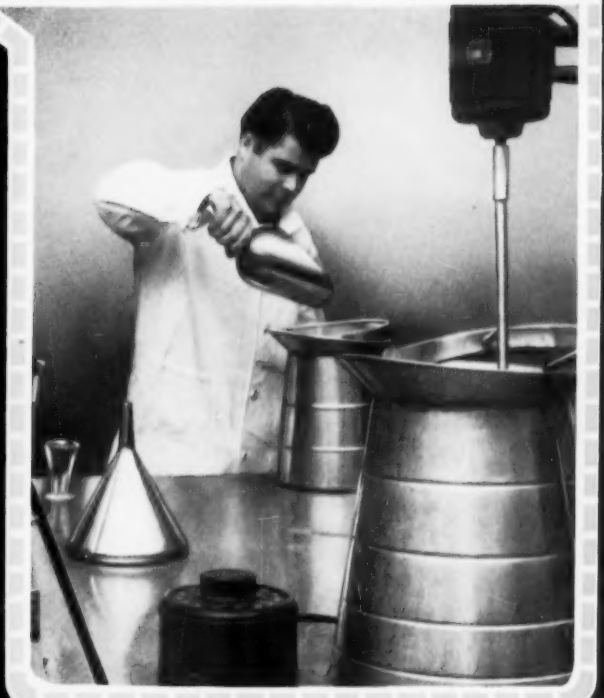
FIRST CLASS
(Sec. 34.9 P.L.&R.)
PERMIT No. 64
NEW YORK, N. Y.

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

4¢ POSTAGE WILL BE PAID BY—

FOOD ENGINEERING
READER SERVICE DEPARTMENT
330 WEST 42nd ST.
NEW YORK 36, N. Y.





Who can mix and match and measure like a Norda Flavor man?

Judgment is *all* here. In those four words, you've just about summed up this vital Norda process. This is where everything depends on tested judgment.

It depends on the judgment of Norda men like this to know when a flavor mixture's ingredients are precisely measured, mixed, and matched to meet the exact requirements of a desired flavor formula.

When the flavor of the next mouthful of a food product is anticipated enjoyably, Norda often has helped that food's maker. Can Norda help you? Get free samples that may show you how.

Flavor It with a Favorite—from

Norda®

NORDA
601 West 26th Street, New York 1, N. Y.

CHICAGO · LOS ANGELES · SAN FRANCISCO · TORONTO · MONTREAL · HAVANA · LONDON · PARIS · GRASSE · MEXICO CITY

For more data, circle this page number on card at back →

PROVERB PRATTLE

"Two heads are better than one"

Aristotle, about 330 B.C., in "Politics" says: "Two good men are better than one." An ancient Chinese proverb shows a similar intent with: "One man sees short, two men see long." In 1546, John Heywood quotes the proverb as it is popularly known.

• Your job is to make a better food product; ours to make a better flavor. Let us show you how

"Sealva-Flavors"

(hermetically sealed flavors in dry powdered form)

can improve your packaged dessert, cake mix, pudding powder, etc., by improving flavor quality and extending shelf-life.

van Ameringen-Haebler, Inc.

521 West 57th Street • New York 19, New York

CHICAGO • TORONTO • LOS ANGELES • PARIS

Plants—Elizabeth and Union Beach, N. J.—Paris

Alva FLAVORS